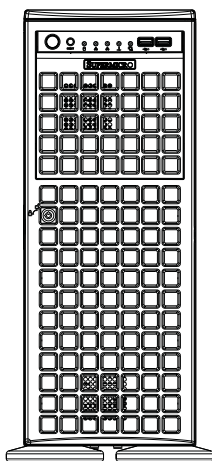


SUPERO[®]

SUPERSERVER
7046GT-TRF
7046GT-TRF-TC4
7046GT-TRF-FC405
7046GT-TRF-FC407



USER'S MANUAL

Revision 1.1

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.1

Release Date: October 23, 2013

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2013 by Super Micro Computer, Inc.
All rights reserved.

Printed in the United States of America

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 7046GT-TRF series server. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 7046GT-TRF series server is based on the SC747TQ-R1400B 4U/Tower rackmount server chassis and the Super X8DTG-QF serverboard. Please refer to our web site for an up-to-date list of supported operating systems, processors and memory.

The only difference between the different servers in the SuperServer 7046GT-TRF series is the model of Graphics Processor Units (GPU) used in each server. See the table below for details:

Model	GPU Model
7046GT-TRF	No cards installed.
7046GT-TRF-TC4	4x Nvidia® Tesla C1060 GPU Cards
7046GT-TRF-FC405	4x Nvidia Fermi C2050 GPU Cards
7046GT-TRF-FC407	4x Nvidia Fermi C2070 GPU Cards

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SuperX8DTG-QF serverboard and the SC747TQ-R1400B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the system into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the system.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X8DTG-QF serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC747TQ-R1400B 4U/Tower rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: System Specifications

Notes

Table of Contents

Chapter 1 Introduction

1-1	Overview	1-1
1-2	Serverboard Features	1-2
	Processors	1-2
	Memory	1-2
	Serial ATA	1-2
	PCI Expansion Slots	1-3
	Onboard Controllers/Ports	1-3
	IPMI	1-3
	Other Features	1-3
1-3	Server Chassis Features	1-4
	System Power	1-4
	Mounting Rails (optional)	1-4
	Hard Drive/Drive Bays	1-4
	Front Control Panel	1-4
	Cooling System	1-4
	Backplane	1-4
1-4	Advanced Power Management (for -F Models Only)	1-5
	Intel® Intelligent Power Node Manager (NM)	1-5
	Manageability Engine (ME)	1-5
1-5	GPU Subsystem	1-5
1-5	Contacting Supermicro	1-7

Chapter 2 System Setup

2-1	Overview	2-1
2-2	Unpacking the System	2-1
2-3	Setting Up the System	2-1
	Checking the Motherboard Setup	2-2
	Checking the Drive Bay Setup	2-2
2-4	Preparing for Rack Mounting Setup	2-3
	Choosing a Setup Location	2-3
2-5	Warnings and Precautions!	2-4
	Rack Precautions	2-4
	General Server Precautions	2-4
	Rack Mounting Considerations	2-5
	Ambient Operating Temperature	2-5
	Reduced Airflow	2-5

	Mechanical Loading	2-5
	Circuit Overloading.....	2-5
	Reliable Ground	2-6
2-5	Installing the Chassis onto a Rack	2-6
	Removing the Chassis Cover and Feet.....	2-6
	Identifying the Sections of the Rack Rails.....	2-8
	Installing the Chassis Handles and Inner Rails.....	2-9
	Installing the Outer Rails to the Rack.....	2-10
	Installing the Chassis into a Rack.....	2-11
2-6	Tower Mounting Instructions	2-12
	Installing the Chassis Cover	2-12
	Installing Feet on the Chassis	2-13
Chapter 3 System Interface		
3-1	Overview	3-1
3-2	Control Panel Buttons.....	3-2
	Power	3-2
	Reset.....	3-2
3-3	Control Panel LEDs	3-2
	HDD.....	3-2
	NIC1	3-2
	NIC2	3-3
	Information LED	3-3
	Power Fail	3-3
3-4	Drive Carrier LEDs.....	3-3
Chapter 4 Standardized Warning Statements for AC Systems		
4-1	About Standardized Warning Statements.....	4-1
	Warning Definition	4-1
	Installation Instructions.....	4-4
	Circuit Breaker	4-5
	Power Disconnection Warning	4-6
	Equipment Installation.....	4-8
	Restricted Area.....	4-9
	Battery Handling.....	4-10
	Redundant Power Supplies	4-12
	Backplane Voltage	4-13
	Comply with Local and National Electrical Codes	4-14
	Product Disposal	4-15
	Hot Swap Fan Warning.....	4-16
	Power Cable and AC Adapter	4-18

Chapter 5 Advanced Serverboard Setup

5-1	Handling the Serverboard	5-1
	Precautions	5-1
	Unpacking	5-1
5-2	Serverboard Installation	
	I/O Slot Shield Installation.....	
5-2	Connecting Cables.....	5-2
	Connecting Data Cables.....	5-2
	Connecting Power Cables	5-2
	Connecting the Control Panel.....	5-2
5-3	I/O Ports	5-3
5-4	Installing the Processor and Heatsink	5-4
	Installing an LGA1366 Processor	5-4
	Installation and Removal of the Heatsink	5-6
5-5	Installing Memory.....	5-7
	Memory Support.....	5-7
	DIMM Module Population Configuration	5-9
5-6	Serverboard Details	5-12
5-7	Connector Definitions	5-14
5-8	Jumper Settings	5-22
	Explanation of Jumpers	5-22
5-9	Onboard Indicators.....	5-25
5-10	SATA Drive Connections.....	5-27
5-11	Installing Software.....	5-28
	SuperDoctor III	5-29
5-13	Serverboard Battery	5-31

Chapter 6 Advanced Chassis Setup

6-1	Static-Sensitive Devices.....	6-2
	Precautions	6-2
6-2	Control Panel	6-2
6-3	System Cooling.....	6-2
	System Fan Failure.....	6-3
	Replacing System Fans	6-3
6-4	Configuring the the Storage Module	6-5
	Tower or Rack Configuration.....	6-5
	Rotating the Storage Module	6-6
	Installing Drives in the Storage Module.....	6-7
	Removing a Drive Carrier	6-8
	Adding Peripheral Drives	6-10

6-5	Installing Hard Drives in the Chassis.....	6-11
6-6	Adding PCI Add-On Cards.....	6-13
	Installing Double-Width Graphics Cards.....	6-15
6-7	Power Supply.....	6-17
	Power Supply Failure.....	6-17
	Replacing the Power Supply.....	6-17
	Power Supply Connections.....	6-18

Chapter 7 BIOS

7-1	Introduction.....	7-1
	Starting BIOS Setup Utility.....	7-1
	How To Change the Configuration Data.....	7-1
	Starting the Setup Utility.....	7-2
7-2	Main Setup.....	7-2
7-3	Advanced Setup Configurations.....	7-4
7-4	Security Settings.....	7-24
7-5	Boot Configuration.....	7-26
7-6	Exit Options.....	7-27
4-7	BIOS Recovery.....	7-28
	How to Recover the AMIBIOS Image (-the Main BIOS Block).....	7-28
	4.7.1 Boot Sector Recovery from a USB Device.....	7-28
	4.7.2 Boot Sector Recovery from an IDE CD-ROM.....	7-29
	4.7.3 Boot Sector Recovery from a Serial Port ("Serial Flash").....	7-29
	Requirements.....	7-29
	How to use Serial Flash for Boot Sector Recovery.....	7-29

Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Notes

Chapter 1

Introduction

1-1 Overview

The SuperServer 7046GT-TRF series is a supercomputing server that is comprised of two main subsystems: the SC747TQ-R1400B 4U/Tower server chassis and the X8DTG-QF dual processor Intel Xeon 5500/5600 series serverboard. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the server, as listed below:

- Two 3.8-cm 4-pin PWM fan assemblies (FAN-0082L4)
- Four 9.2x3.8 cm 4-pin PWM fan assemblies (FAN-0114L4)
- Two 4U active CPU heatsinks (SNK-P0035AP4)
- SATA accessories:
 - I/O shield (MCP-260-00025-0N)
 - One HD backplane (BPN-SAS-747TQ)
 - Six 35-cm SATA cables (CBL-0061L)
 - Two 40-cm PBF 8-pin to 8-pin ribbon cable with tube for SGPIO (CBL-0157L)
 - Eight 3.5" hard disk drive trays (MCP-220-97301-0B)
 - Three 5.25" drive trays (MCP-220-00073-0B)
- Chassis cables:
 - One 30-inch Round 16 to 16-pin ribbon front panel cable (CBL-0071L)
 - Four 20-cm 4 to 4-pin middle fan power extension cables (CBL-0216L)
 - Two 30-cm 4 to 4-pin rear fan power extension cables (CBL-0286L)
- One 4U 17.2" width rail set (MCP-290-00059-0N) (optional)
- Four NVidia Tesla GPU add-on cards (none installed for the 7046GT-TRF)
 - (AOC-GPU-NVC1060 - 7046GT-TRF-TC4)
 - (AOC-GPU-NVC2050 - 7046GT-TRF-FC405)
 - (AOC-GPU-NVC2070 - 7046GT-TRF-FC407)

Note: For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety information:
http://super-dev/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at:
support@supermicro.com

1-2 Serverboard Features

At the heart of the SuperServer 7046GT-TRF series lies the X8DTG-QF, a dual processor serverboard based on the Intel 5520 (IOH-36D)/ICHR10R chipset. Below are the main features of the X8DTG-QF. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X8DTG-QF supports two Intel® Xeon 5500/5600 series (LGA1366) processors supporting two full-width Intel QuickPath Interconnect (QPI) links with a total of up to 51.2 GT/s Data Transfer Rate (6.4 GT/s per direction). Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X8DTG-QF has twelve (12) 240-pin DIMM slots that can support up to 192 GB of registered ECC or up to 48 GB of unbuffered ECC/non-ECC DDR3 1333/1066/800 MHz speed SDRAM. Modules of the same size and speed are recommended with a size of 1 GB, 2 GB, 4 GB, 8 GB and 16 GB (for Unbuffered ECC/Non-ECC memory, a maximum of 4 GB per DIMM is supported). See Chapter 5 for details.

Serial ATA

A SATA controller is integrated into the South Bridge (Intel ICHR10R) section of the chipset to provide a six-port 3/Gbs SATA subsystem, which is RAID 0, 1, 5 and 10 supported (RAID 0, 1, 5 and 10 supported in the Windows OS Environment and RAID 0, 1 and 10 supported by the Linux OS). The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the Serial ATA drives.

PCI Expansion Slots

The X8DTG-QF has four PCI-E Gen. 2.0 x16 slots (Slot 4, Slot 6, Slot 8, Slot 10), one PCI-E Gen. 2.0 x4 (in x16) slot (Slot 2), one PCI-E 2.0 x4 (in x8) slot (Slot 11), one PCI-E Gen. 1.0 x4 (in x16) slot (Slot 1) and two PCI 33 MHz slots (Slot 3, Slot 5) for a total of nine (9) PCI expansion slots.

Onboard Controllers/Ports

The color-coded I/O ports include one COM port (an additional COM header is located on the serverboard), a VGA (monitor) port, ten USB 2.0 ports (six rear USB ports, two front headers, and two Type A connections), PS/2 mouse and keyboard ports, IPMI dedicated LAN port, High Definition Audio ports and two Gb Ethernet ports.

IPMI

IPMI (Intelligent Platform Management Interface) is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro server platforms. IPMI allows server administrators to view a server's hardware status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive.

Other Features

Other onboard features that promote system health include onboard voltage monitors, auto-switching voltage regulators, a chassis intrusion header, keyboard wakeup from soft-off, console redirection, chassis and CPU overheat sensors, fan status monitor with firmware control, Pulse Width Modulation (PWM) Fan Control, power-up mode control for recovery from AC power loss, main switch override mechanism, ACPI Power Management, system resource alert via Super Doctor III, virus protection and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC747TQ-R1400B server chassis.

System Power

Each SC747 chassis model includes a Gold level High-efficiency redundant (1+1) power supply (93%), rated at 1400 Watts. In the unlikely event your power supply fails, replacement is simple and can be done without tools. The AC power cord should be removed from the system before servicing or replacing the power supply. See Chapter 6 for details.

Mounting Rails (optional)

The SC747 can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual in chapter 2.

Hard Drive/Drive Bays

The SC747 Chassis features eight hot-swappable slots for SATA drives. Once set up correctly, these drives can be removed without powering down the server.

The SC747 Chassis provides three 5.25" peripheral drive bays one 3.5" fixed drive bay for floppy drives, DVD-ROM/CD-ROM Drives, or additional hard drives.

Front Control Panel

The control panel on the server provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat, UID and power supply failure. A main power button and a system reset button are also included.

Cooling System

The SC747 chassis accepts four system fans and two rear exhaust fans. System fans are powered from the serverboard. These fans are 4U high and are powered by 4-pin connectors.

Backplane

Each SC747 chassis comes with a 4U backplane. Depending on your order, your backplane will accept SATA. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: <http://www.supermicro.com>.

1-4 Advanced Power Management (for -F Models Only)

Intel® Intelligent Power Node Manager (IPNM)

The Intel® Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 1.5 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Manageability Engine (ME) firmware installed to use this feature.

Manageability Engine (ME)

The Manageability Engine, which is an ARC controller embedded in the IOH (I/O Hub), provides Server Platform Services (SPS) to your system. The services provided by SPS are different from those provided by the ME on client platforms.

1-5 GPU Subsystem

Some models in the SuperServer 7046GT-TRF series use are a parallel processing server using multiple-GPU cards. These multiple-GPU servers include four NVIDIA® Tesla™ GPUs with multiple x16 non-blocking native Gen2 PCI-Express connectivity that places these systems at the forefront of today's GPU computing solutions. See page 1-1 for information on which GPU cards are available for each SuperServer 7046GT-TRF series server.

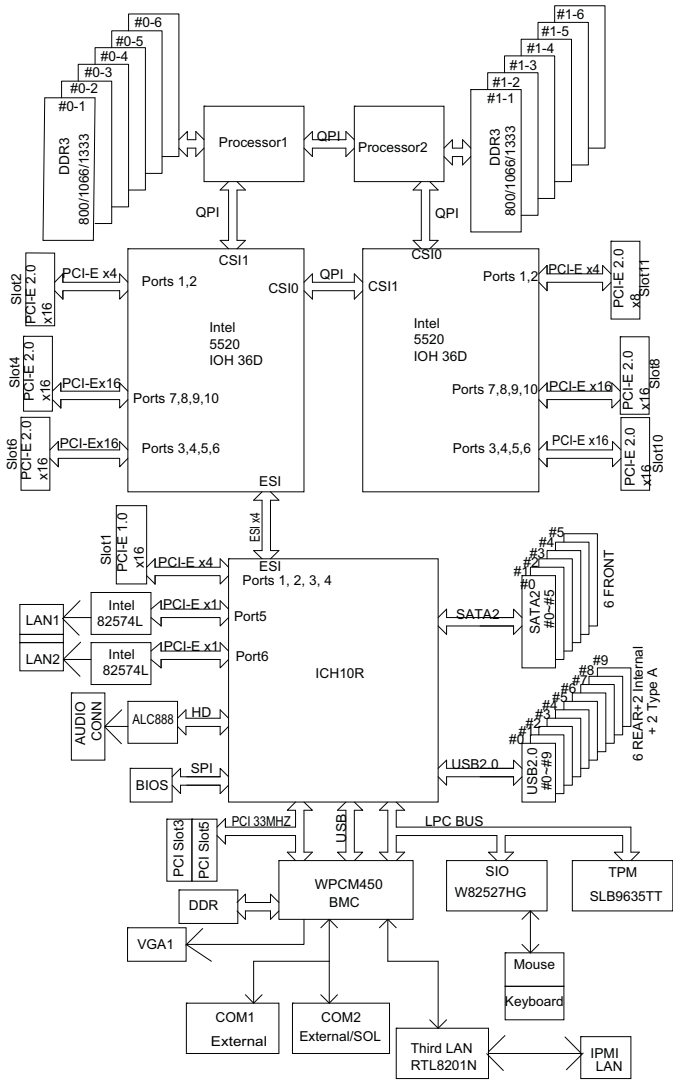
Refer to the NVIDIA web site (www.nvidia.com) for details on Tesla GPUs.

Notes:

1. The GPUs process complex image calculations and then route the data out through the VGA port on the serverboard.
2. Each GPU includes an active heatsink. Its fans work independently of the system fans and cooling parameters.

Figure 1-1. Intel 5520 Chipset:
System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-5 Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Asia-Pacific

Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 23511
Taiwan (R.O.C)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: +886-(2)-8226-3990

Notes

Chapter 2

System Setup

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 7046GT-TRF series server up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 7046GT-TRF series server was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for setting up and operating the SuperServer 7046GT-TRF series server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet.

- Review the electrical and general safety precautions in Chapter 4.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and Serial ATA drives to cool before touching them.
- To maintain proper cooling, always keep all chassis panels closed when not being serviced.

2-3 Setting Up the System

You should first open the left side panel (when facing the front of the chassis) to make sure the motherboard is properly installed and all connections have been made.

Warning: Only qualified service technicians should access the inside of the system. Except for short periods of time, do NOT operate the system without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

Checking the Motherboard Setup

1. Accessing the inside of the system: Begin by disconnecting the chassis from any power source. (A) Lift up and back on the main cover handle, which secures the cover to the chassis. (B) Lift the main cover off of the chassis. See Chapter 5 for details on Chassis covers and how to remove them.
2. Check the CPU (processor): You may have a processor already installed into the system board. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.
3. Check the system memory: Your system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.
4. Installing add-on cards: If desired, you can install up to nine add-on cards to the system. See Chapter 5 for details on installing PCI- add-on cards.

Note: The SuperServer 7046GT-TRF series server may contain four GPU add-on card modules that occupy many of these add-on card expansion slots.

5. Check all cable connections and airflow: Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections.

Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives have been properly installed and all essential connections have been made.

1. Accessing the peripheral drive bays: To install a component to either of the two 5.25" drive bays, you will need to remove the side chassis cover. See the installation and removal sections for the peripheral drives in Chapter 6.
2. Check the SATA disk drives: Depending upon your system's configuration, your system may have up to four SATA drives already installed. If you need to install or remove an SATA drive, please refer to the appropriate section in Chapter 6.
3. Check the airflow: Cooling air is provided by the chassis fan and the power supply fan. The system component layout was carefully designed to promote sufficient airflow throughout the chassis. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fan. Please keep this in mind when rerouting or adding/removing cables.

4. Supplying power to the system: The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

2-4 Preparing for Rack Mounting Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

2-5 Warnings and Precautions!



Warning! To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations



Warning: Do not pick up the server with the front handles. They are designed to pull the system from a rack only.



Stability Hazard: The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Warning: When initially installing the server to a rack, test that the rail locking tabs engage to prevent the server from being overextended. Have a rack lift in place as a precaution in case the test fails.

Warning: In any instance of pulling the system from the rack, always use a rack lift and follow all associated safety precautions.

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T_{mra}).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-5 Installing the Chassis onto a Rack

This section provides information on installing the SC747 chassis into a rack unit with the optional 4U 17.2" width rail set (MCP-290-00059-0N). There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: The outer rail is adjustable from 26" to 38.25".

NOTE: The MCP-290-00059-0N rail kit is an optional accessory.

Removing the Chassis Cover and Feet

The SC747 chassis is shipped with the chassis cover and feet pre-installed. Both the feet and cover must be removed for before installing the rails.

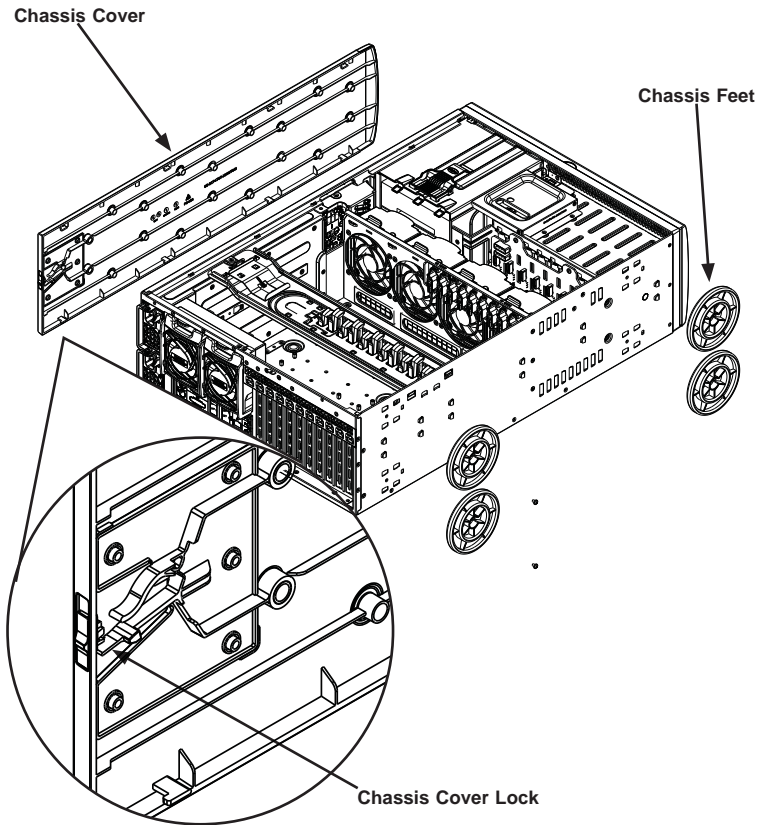
Removing the Chassis Top Cover

5. Locate the chassis cover lock (blue lever) at the rear of the chassis cover.
6. Slide the chassis cover lock to the right and push chassis cover forward.
7. Lift the chassis top cover off the chassis.

Removing the Chassis Feet

1. Place the chassis on its side with the chassis side cover facing upward.
2. Remove the screw holding the chassis foot in place.
3. The foot lock is a tab located in the center of the foot that prevents the foot from sliding. Using a flat head screwdriver, **gently** lift the foot lock upward and slide the foot toward the rear of the chassis.
4. Repeat steps 2 and 3 with each remaining foot.

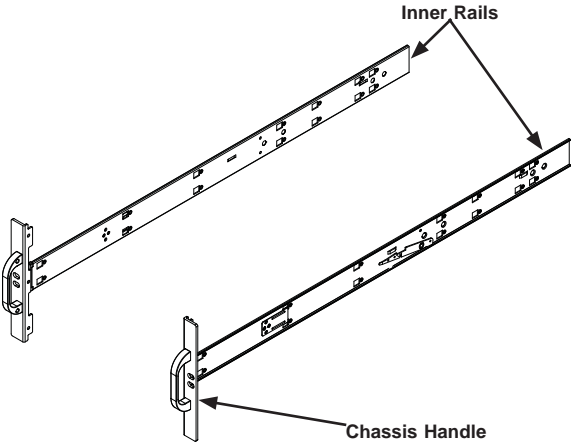
Figure 2-1: Removing the Feet and Chassis Top Cover



Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Figure 2-2: Identifying the Inner Rails and Chassis Handles

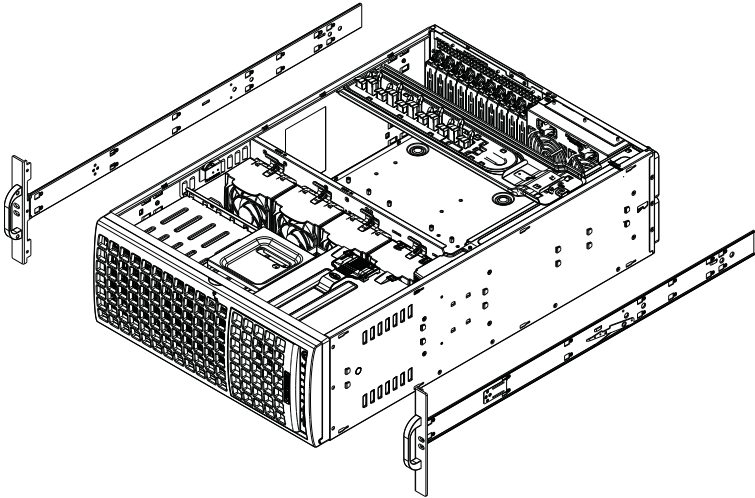


Installing the Chassis Handles and Inner Rails

Installing the Inner Rails

1. Locate the chassis handles and handle screws.
2. Align the chassis handle with the front of the chassis and secure with the three chassis handle screws.
3. Repeats steps 1 and 2 with the other handle.
4. Locate the inner rails and screws in the shipping package.
5. Align the inner rails against the chassis, as shown. Confirm that the rails are flushed against the edge of the chassis.
6. Tighten the screws. Do not over-tighten.
7. Repeat steps 5 and 6 with the other inner rail.

Figure 2-3: Installing the Inner Rack Rails

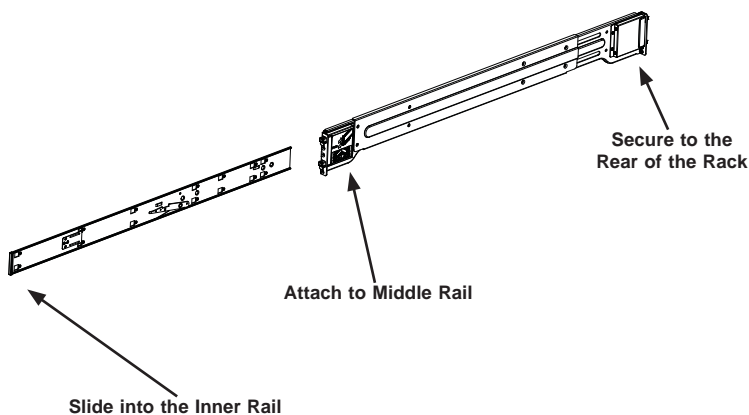


Installing the Outer Rails to the Rack

Installing the Outer Rails

1. Attach the rear bracket to the middle bracket.
2. Adjust both the brackets to the proper distance so that the rail fits snugly into the rack.
3. Secure the rear of the outer rail with two M5 screws and the rear of the rack.
NOTE: The outer rail is adjustable from approximately 26" to 38.25".
4. Repeat steps 1-3 for the left outer rail.

Figure 2-4: Assembling the Outer Rails

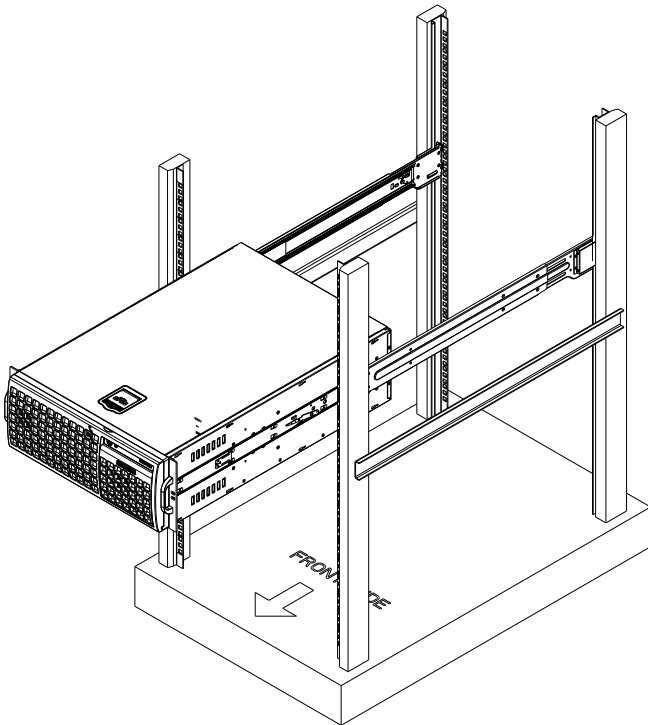


Installing the Chassis into a Rack

Installing the Chassis

1. Confirm that chassis includes the inner rails and the outer rails.
2. Align the inner chassis rails with the front of the outer rack rails (C).
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the chassis has been pushed completely into the rack, you should hear the locking tabs "click" into the locked position.

Figure 2-5: Installing the Rack Rails



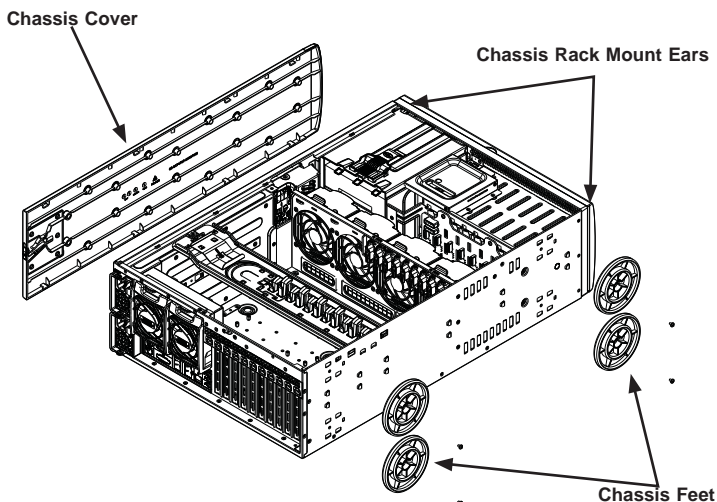
Note: The figure above is for illustrative purposes only. Always install servers to the bottom of the rack first.

2-6 Tower Mounting Instructions

The SC747 chassis is shipped with the chassis cover and feet pre-installed. To use the chassis as a desktop server, no other installation is required.

Use the instructions in this section if you have converted the chassis for rack use and need to return the chassis to tower mounting.

Figure 2-6: Adding Chassis Feet and Top Cover



Installing the Chassis Cover

Installing the Cover

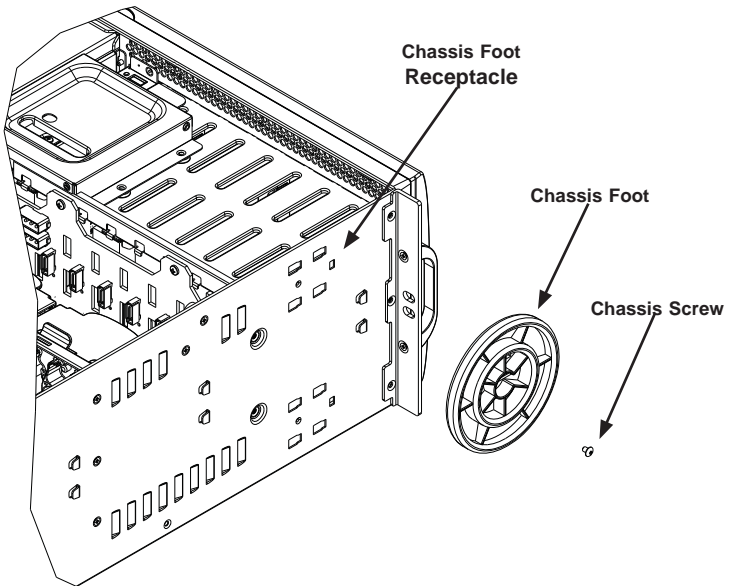
1. Remove the rack mount ears.
2. Align the cover post with the corresponding holes on the top of the chassis and place the cover on top of the chassis. The cover should overhang approximately one-half inch over the front of the chassis.
3. Slide the chassis cover toward the rear of the chassis to lock the cover into place.

Installing Feet on the Chassis

Installing the Chassis Feet

1. Place the chassis foot in the foot receptacle and slide the foot toward the front of the chassis. The foot should lock into place.
2. Secure the foot to the chassis using one screw enclosed in the packaging.
3. Repeat steps 1 and 2 for the remaining three chassis feet

Figure 2-7: Placing Chassis Feet



Notes

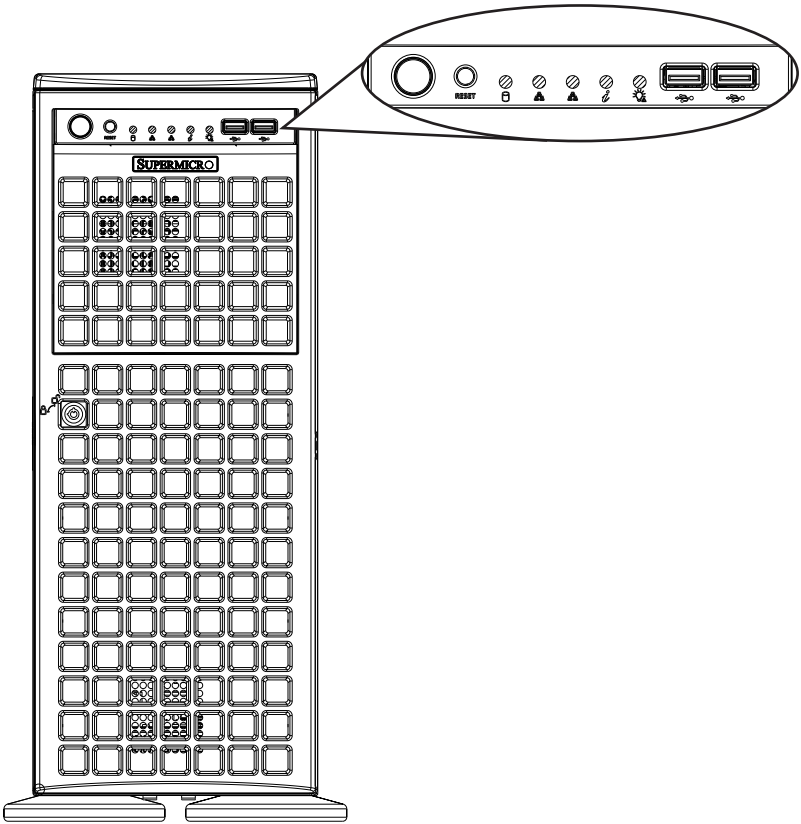
Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. Most SC747 models are two buttons on the chassis a control panel: a reset button and an on/off switch. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

Figure 3-1: Front LEDs



3-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are power on/off button and a reset button.



Power

The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

RESET



Reset

The reset button is used to reboot the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC747 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



HDD

Indicates IDE channel activity. SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.



NIC1

Indicates network activity on GLAN1 when flashing.



NIC2

Indicates network activity on GLAN2 when flashing.



Information LED

See the following table for the status shown by this LED.

Information LED	
Status	Description
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1 Hz)	Fan failure: check for an inoperative fan.
Blinking red (0.25 Hz)	Power failure: check for an inoperative power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack environment.
Blinking blue (300 msec)	Remote UID has been activated. Use this function to locate the server from a remote location.



Power Fail

Indicates a power failure to the system's power supply units.

3-4 Drive Carrier LEDs

Each drive carrier has two LEDs:

SATA Drives

- **Green:** When illuminated, the green LED on the SATA drive carrier indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed. Please refer to Chapter 6 for instructions on replacing failed SATA drives.
- **Red:** When this LED flashes it indicates the drive is rebuilding. When solid on it indicates a SATA drive failure. If a drive fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition



Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危險。

您正處於可能受到嚴重傷害的工作環境中。在您使用設備開始工作之前，必須充分意識到觸電的危險，並熟練掌握防止事故發生的標準工作程序。請根據每項警告結尾的聲明號碼找到此設備的安全性警告說明的翻譯文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

Warnung

WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

תקנון הזהירות אזהרה

הזהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر
الكهربائية
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions



Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前，请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقرأ إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker



Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。
保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V, 20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V, 20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי
המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في
المبنى

تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning



Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

電源切斷の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、

システムの電源はすべてのソースから切斷され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前,必須將系統完全斷電,並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chasis pour installer ou enlever des composants de système.

אזהרה מפני ניתוק חשמלי**אזהרה !**

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארו לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل الوصول إلى المناطق الداخلية للهيكल لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation



Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتثبيت واستبدال أو خدمة هذا الجهاز

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

Restricted Area



Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזור עם גישה מוגבלת

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד').

تم تخصيص هذه الوحدة لت تركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling



Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המושמשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontplofingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies



Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אם קיים יותר מספק אחד

אזהרה!

ליחידה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage



Warning!

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。
修理するには注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

מתח בפנל האחורי

אזהרה!

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

هناك خطر من التيار الكهربائي أو الطاقة الموجودة على اللوحة عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes



Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales. Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

תאום חוקי החשמל הארצי

אזהרה !

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمثل للقوانين المحلية والوطنية المتعلقة
بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal



Warning!

Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר**אזהרה !**

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقاً لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Hot Swap Fan Warning**Warning!**

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

警告

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Los ventiladores podran dar vuelta cuando usted quite el montaje del ventilador del chasis. Mantenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה!

כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter



Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)をSupermicroが指定する製品以外に使用することを禁止しています。

警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾.除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

警告

安裝此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災.除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA câbles certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

חשמליים ומתאמי AC

אזהרה !

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צוין על ידי סופרמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحولات التيار المتردد

التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج

الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل

لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro (التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X8DTG-QF serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- SATA drive data cables (SATA0 ~ SATA5)
- SGPIO cable (T-SGP101, TSGPIO2)
- Control Panel cable (JF1)

Important! Make sure the the cables do not come into contact with the fans.

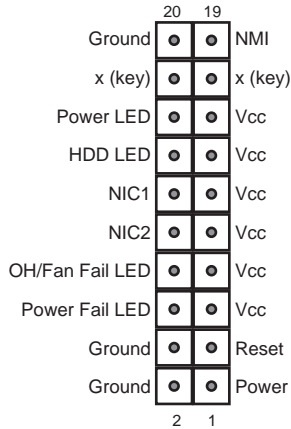
Connecting Power Cables

The X8DTG-QF has a 24-pin proprietary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are two 8-pin secondary power connectors (JPW2, JPW3) that also must be connected to your power supply. See Section 5-7 for power connector pin definitions.

Connecting the Control Panel

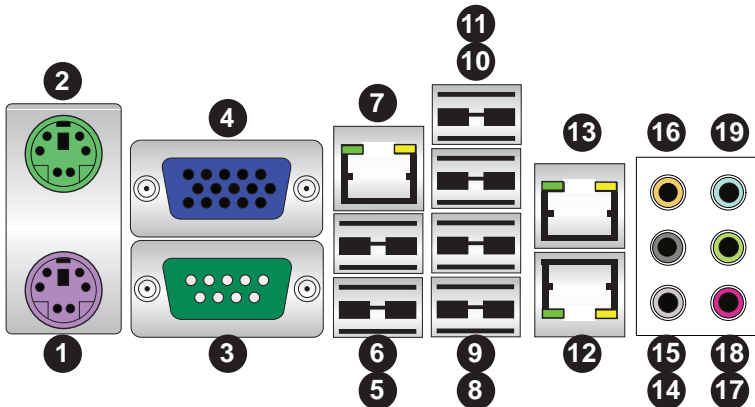
JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See below for details and pin descriptions.

Figure 5-1. Control Panel Header Pins

5-3 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports

Rear I/O Ports			
1. Keyboard (Purple)	2. PS/2 Mouse (Green)	3. COM Port 1 (Turquoise)	4. VGA (Blue)
5. USB 0	6. USB1	7. IPMI_Dedicated LAN	8. USB 2
9. USB 3	10. USB 4	11. USB 5	12. LAN 2
13. LAN 1	14. Side_surround	15. Back_surround	16. CEN/LFE
17. Microphone_In	18. Front	19. Line_In	

5-4 Installing the Processor and Heatsink

Warning: Avoid placing direct pressure to the top of the processor package. Always remove the power cord first before adding, removing or changing any hardware components.

Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing an LGA1366 Processor

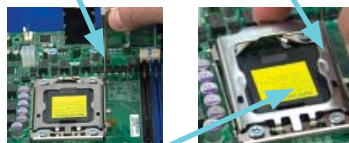
1. Press the socket clip to release the load plate, which covers the CPU socket, from its locked position.
2. Gently lift the socket clip to open the load plate.
3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.

Note: The photos on this page and succeeding pages are for illustration purposes only. They do not necessarily reflect the exact product(s) described in this manual.



Socket Clip

Load Plate



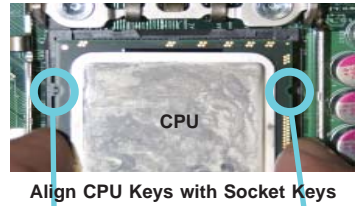
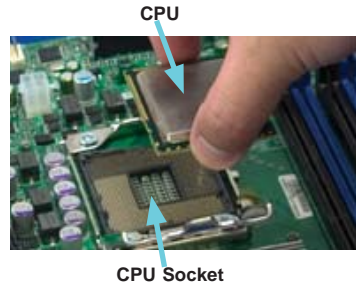
Plastic Cap



Holding the North & South Edges

4. After removing the plastic cap, use your thumb and the index finger to hold the CPU at the north and south center edges.
5. Align the CPU key (the semi-circle cutout) with the socket key (the notch below the gold color dot on the side of the socket).
6. Once the CPU and the socket are aligned, carefully lower the CPU straight down into the socket. Do not rub the CPU against the surface of the socket or its pins to avoid damaging the CPU or the socket.
7. With the CPU in the socket, inspect the four corners of the CPU to make sure that it sits level and is properly installed.
8. Once the CPU is securely seated in the socket, lower the CPU load plate to the socket.
9. Use your thumb to gently push the socket clip down to the clip lock.

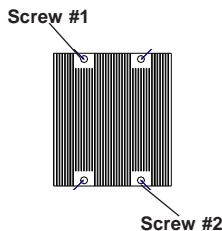
Important! Please save the plastic cap. The serverboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed may cause damage to the socket pins.



Installation and Removal of the Heatsink

Installing the Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.
3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug (do not over-tighten the screws, which may damage the CPU.)
4. Finish the installation by fully tightening all four screws.

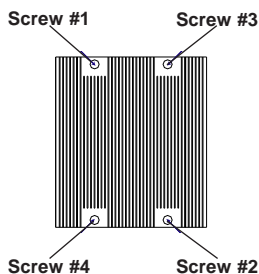


Note: Make sure the heatsink is placed so that the fins of the heatsink are in the direction of the airflow in your system.

Uninstalling the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to uninstall the heatsink, please follow these instructions to avoid damaging the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws in the sequence shown in the picture on the right.
2. Hold the heatsink as shown in the picture on the right and gently wriggle to loosen it from the CPU. (Do not use excessive force when doing this!)
3. Once the heatsink is loosened, remove it from the CPU socket.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the heatsink.



5-5 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Memory Support

The X8DTG-QF supports up to 192 GB of registered ECC or up to 48 GB of unbuffered ECC/non-ECC DDR3 1333/1066/800 MHz speed SDRAM in twelve (12) DIMM slots. See the following table for memory installation.

Notes: The X8DTG-QF supports 1 GB, 2 GB, 4 GB, 8 GB and 16 GB of registered ECC DIMMs. However, with unbuffered ECC/non-ECC memory only 4 GB is the maximum DIMM size that can be supported per slot.

Memory speed support is dependent on the type of CPU used on the board.

Installing Memory Modules

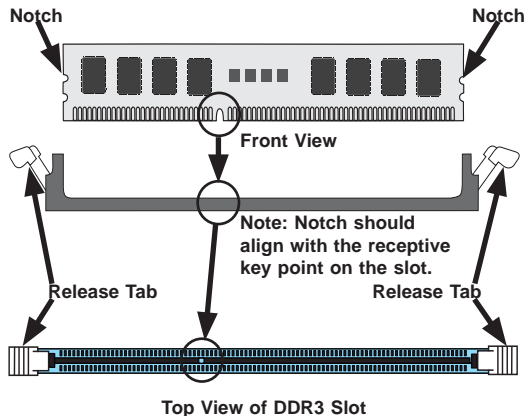
1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMM 1A. For best memory performance, please install memory modules of the same type and same speed on the memory slots as indicated on the tables below.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to avoid installing incorrectly (see Figure 5-6).
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules.

Note: For the latest CPU/memory updates, please refer to our website at <http://www.supermicro.com/products/motherboard>.

Figure 5-3. DIMM Installation

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove: Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Memory Population for Optimal Performance -For a motherboard with One CPU (CPU1) installed						
	Branch 0		Branch 1		Branch 2	
3 DIMMs	P1 DIMM1A		P1 DIMM2A		P1 DIMM3A	
6 DIMMs	P1 DIMM1A	P1 DIMM1B	P1 DIMM2A	P1 DIMM2B	P1 DIMM3A	P1 DIMM3B

Memory Population for Optimal Performance -For a motherboard with One CPU (CPU2) installed						
	Branch 0		Branch 1		Branch 2	
3 DIMMs	P2 DIMM1A		P2 DIMM2A		P2 DIMM3A	
6 DIMMs	P2 DIMM1A	P2 DIMM1B	P2 DIMM2A	P2 DIMM2B	P2 DIMM3A	P2 DIMM3B

Memory Population for Optimal Performance -For a motherboard with Two CPUs installed												
	CPU1						CPU2					
	Branch 0		Branch 1		Branch 3		Branch 0		Branch 1		Branch 3	
6 DIMMs	1A		2A		3A		1A		2A		3A	
12 DIMMs	1A	1B	2A	2B	3A	3B	1A	1B	2A	2B	3A	3B

Note1: For Unbuffered ECC/Non-ECC memory, maximum of 4 GB per DIMM is supported.

Note 2: Memory speed support is dependent on the type of CPU used on the board.

DIMM Module Population Configuration

For memory to work properly, follow the tables below for memory installation:

Memory Support for Serverboards with 5500 Processors

RDIMM Population for Serverboards with 5500 Processors Installed				
DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Reg. DDR3 ECC	800,1066,1333	SR or DR
2	1	Reg. DDR3 ECC	800,1066 (Note 1)	QR
2	2	Reg. DDR3 ECC	800,1066 (Note 1)	Mixing SR, DR
2	2	Reg. DDR3 ECC	800 (Note 2)	Mixing SR, DR, QR
Note 1: 1333 RDIMMs will run at 1066 Mhz (-BIOS automatic downgrading)				
Note 2: 1333/1066 RDIMMs will run at 800 Mhz (-BIOS automatic downgrading)				

UDIMM Population for Serverboards with 5500 Processors Installed				
DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Unbuffered DDR3 ECC/ Non-ECC	800,1066,1333	SR or DR
2	2	Unbuffered DDR3 ECC/ Non-ECC	800,1066 (Note)	Mixing SR, DR
Note 1: 1333 RDIMMs will run at 800 Mhz (-BIOS automatic downgrading)				

Memory Support for Serverboards with 5600 Processors

- 1.5V DIMMs

1.5V RDIMM Population for Serverboards with 5600 Processors Installed

DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Reg. DDR3 ECC	800,1066,1333	SR or DR
2	1	Reg. DDR3 ECC	800,1066 (Note 1)	QR
2	2	Reg. DDR3 ECC	800,1066 (Note 1)	Mixing SR, DR
2	2	Reg. DDR3 ECC	800 (Note 2)	Mixing SR, DR,QR
Note 1: 1333 RDIMMs will run at 1066 Mhz (-BIOS automatic downgrading)				
Note 2: 1333/1066 RDIMMs will run at 800 Mhz (-BIOS automatic downgrading)				
Note 3: Mixing of 1.35V and 1.5V DIMMs is not recommended.				

1.5V UDIMM Population for Serverboards with 5600 Processors Installed

DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Unbuffered DDR3 ECC/ Non-ECC	800,1066,1333	SR or DR
2	2	Unbuffered DDR3 ECC/ Non-ECC	800,1066,1333	Mixing SR, DR
Note 1: 1333 Mhz for two DIMMs per channel is supported when Unbuffered/ECC DIMMs are used				
Note 2: Mixing of 1.35V and 1.5V DIMMs is not recommended.				

- 1.35V DIMMs

1.35V RDIMM Population for Serverboards with 5600 Processors Installed				
DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Reg. DDR3 ECC	800,1066,1333	SR or DR
2	1	Reg. DDR3 ECC	800 (Note 1)	QR
2	2	Reg. DDR3 ECC	800,1066 (Note 2)	Mixing SR, DR
2	2	Reg. DDR3 ECC	800 (Note 3)	Mixing SR, DR,QR
Note 1: 1333/1066 QR RDIMMs will run at 800 Mhz (-BIOS automatic downgrading) Note 2: 1333 SR/DR RDIMMs will run at 800 Mhz (-BIOS automatic downgrading) Note 3: 1333 SR/DR/QR RDIMMs will run at 800 Mhz (-BIOS automatic downgrading) Note 4: Mixing of 1.35V and 1.5V DIMMs is not recommended.				

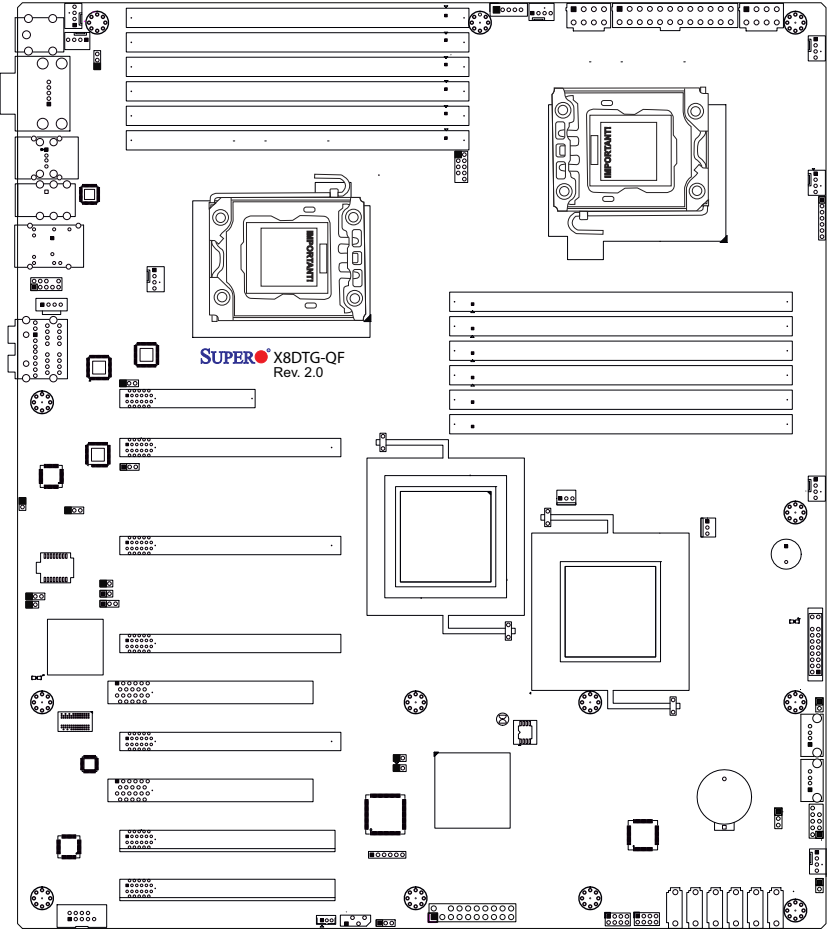
1.5V UDIMM Population for Serverboards with 5600 Processors Installed				
DIMM Slots per Channel	DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
2	1	Unbuffered DDR3 ECC	800,1066,1333	SR or DR
2	2	Unbuffered DDR3 ECC	800,1066	Mixing SR, DR
Note 1: 1333 Mhz for two DIMMs per channel is supported when Unbuffered/ECC DIMMs are used Note 2: Mixing of 1.35V and 1.5V DIMMs is not recommended.				

Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Note 2: Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

5-6 Serverboard Details

Figure 5-11. X8DTG-QF Layout
(Not Drawn to Scale)



Notes:

1. Jumpers not indicated are for test purposes only. For more information on jumpers or components, refer to Chapter 2.
2. " " indicates the location of Pin 1.
3. When DP1 LED is on, the onboard power connection is on. Make sure to unplug the power cables before removing or installing components.

X8DTG-QF Quick Reference		
Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 2-8)
J ² C1/J ² C2	SMB to PCI/PCI-E Slots	Open (Disabled)
JL2	Audio Mode Select	Open (HD Mode)
JPAC	Audio Enable	Pins 1-2 (Enable)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable	Pins 1-2 (Normal)
JPUSB1/2	Back/FP USB Wake-up Enable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
(HD) Audio/CD-In/FP Audio	7.1 Channel High Definition Audio (JAUDIO1)/CD-In (CD-1)/Front Panel Audio
COM1/COM2	COM1/COM2 Serial Connections
FAN#1~10	System/CPU Fan Headers (Fans 7~8: CPU Fans)
I-SATA0 ~ 5	(Intel South Bridge) SATA Ports 0~5
JD1	PWR LED (Pins 1~3)/Speaker (Pins 4~7)
JF1	Front Panel Connector
JL1	Chassis Intrusion
JOH1	Overheat LED Indicator
JPW1,JPW2/JPW3	12V 24-pin Main PWR, 8-pin PWR Connectors
JSMB1	System Management Bus I ² C Header
JTPM1	TPM (Trusted Platform Module) Header
JWOL	Wake-On_LAN
KB/Mouse	PS2 Keyboard/Mouse
LAN1/2, IPMI_LAN	Gigabit Ethernet Ports 1~2, IPMI LAN
SP1	Internal Speaker/Buzzer Header
T-SGPIO-0/1	Serial General Purpose IO Headers
USB 0/1, 2/3/4/5	Backplane USB Ports 0/1, 2/3/4/5
USB 6, 7, 8/9	Front Panel USB 6, 7, 8/9
VGA	Video Port

LED	Description
DP1	Onboard Standby PWR warning LED Indicator
D33	BMC LED Indicator

5-7 Connector Definitions

Power Connections

A 24-pin main power supply connector(JPW1) and two 8-pin CPU PWR connectors (JPW2/JPW3) on the motherboard. These power connectors meet the SSI EPS 12V specification. All these three power connectors must be connected to your power supply to ensure adequate power supply to your system. See the table on the right for pin definitions.

Warning: To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin and two 8-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the two 8-pin (JPW2,JPW3) power connectors on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard.

Notes: For the these proprietary connectors to work properly, please customize your PWR cables based on the SMC PWR Connector Pin-Out Definitions listed in the tables above. For the PCI-Exp. Graphic cards to work properly, connect the PCI-E graphic card power connectors (JPW2/JPW3) to the power supply.

ATX Power 24-pin Connector Pin Definitions (JPWR3)			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-pin PWR Connector Pin Definitions (JPWR1/2)	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connections

Power Button Connector

The PW_ON connector is on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Fail LED

Overheat/Fan Fail/PWR Fail/UID LED

Connect an LED cable to pins 7 and 8 of JF1 for the Overheat/Fan Fail/Power Fail connections. The red LED (pin 8) provides warning of an overheat, fan failure or power failure. The blue LED (pin 7) works as the UID LED indicator for the front panel UID button located on pins 13~14 of JF1. When Jumper J_UID_OW is set to off (default), the red LED takes precedence over the blue LED. (See Page 2-31 for details.) Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue_LED-Cathode(UID)/5.5V.SB
8	OH/Fan Fail/PWR Fail/UID LED (Red)

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

NIC2 (JLAN2) LED

The LED connections for JLAN2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (JLAN1) LED

The LED connections for JLAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

HDD/FP UID Button

The HDD/UID button connections are located on pins 13/14 of JF1. Attach a hard-drive LED cable to display HDD or SATA activity. This connection can also be used for the front panel UID (Unit Identifier) button. (The UID LED on pin 7 of JF1 works in conjunction with the UID button.) When the user presses and releases the UID button, the UID LED will be turned on or off to indicate the location of the unit in a stack or rackmounted servers.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	UID Signal/3.3V
14	HDD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+3.3V Stby
16	Control

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Fan Headers

The X8DTG-QF has ten chassis/system fan headers (Fan1 to Fan10). Fan 7 and Fan 8 are CPU Fans. All these 4-pin fans headers are backward compatible with the traditional 3-pin fans. Fan speed control is available for 4-pin fans but not supported by 3-pin fans. The fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (The Default setting is disabled.) See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

Universal Serial Bus (USB)

Six Universal Serial Bus ports (USB 0/1, 2/3/4/5) are located on the I/O back panel. Additional four USB connections (USB 6, 7, 8/9) are used to provide front chassis access. Connect USB cables to these USB ports/headers to use USB connections. (USB cables are not included). See the tables on the right for pin definitions.

Back Panel USB 0/1, 2/3/4/5 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

Front Panel USB 6,7, 8/9 Pin Definitions			
USB 6, 7, 8		USB 9	
Pin#	Definition	Pin#	Definition
1	+5V	6	+5V
2	USB_PN2	7	USB_PN3
3	USB_PP2	8	USB_PP3
4	Ground	9	Ground
5	NC	10	Key

NC = No Connection

Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

Ethernet Ports

Two Gigabit Ethernet ports (LAN1, LAN2) are located next to the USB 2~5 on the IO Backplane. In addition, an IPMI_Dedicated LAN is located above USB 0/1 ports on the backplane to provide KVM support for IPMI 2.0. All these ports accept RJ45 type cables. Please refer to the LED Indicator Section for LAN LED information.



LAN Ports Pin Definition (LAN 1/2)			
Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	18	Ground

NC = No Connection

Serial Ports

Two COM connections (COM1 & COM2) are located on the motherboard. COM1 is located on the Backplane IO panel. COM2 is header located next to PCI-E Slot 1 to provide additional serial connection support. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

NC = No Connection

T-SGPIO 1/2 Headers

Two SGPIO (Serial-Link General Purpose Input/Output) headers (T-SGPIO-1/T-SGPIO-2) are located on the motherboard. These headers support serial link interfaces for the onboard SATA connectors. See the table on the right for pin definitions. Refer to the board layout below for the location.

SGPIO Header Pin Definitions (T-SGPIO1/T-SGPIO2)			
Pin#	Definition	Pin#	Definition
1	NC	2	Data In
3	Ground	4	Data Out
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

(Back_Panel) High Definition Audio (HD Audio)

This motherboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously supports multiple-streaming 7.1 sound playback with 2 channels of independent stereo output for front L&R, rear L&R, center and subwoofer speakers. Use the software included in the CD-ROM with your motherboard to use this feature.



(BP) HD Audio	
Con#	Signal
1	Side_Surround
2	Back_Surround
3	CEN/LFE
4	Microphone_In
5	Front
6	Line_In

CD & 10-pin Audio Headers

A 4-pin CD header (CD1) and a 10-pin Front Panel Audio header (J138) are also located on the motherboard. These headers allow you to use the onboard sound for audio CD playback. Connect an audio cable from your CD drive to the CD header that fits your cable's connector. See the tables at right for pin definitions for these headers.

CD1 Pin Definition	
Pin#	Definition
1	Left
2	Ground
3	Ground
4	Right

10-in Audio Pin Definitions	
Pin#	Signal
1	Microphone_Left
2	Audio_Ground
3	Microphone_Right
4	Audio_Detect
5	Line_2_Right
6	Ground
7	Jack_Detect
8	Key
9	Line_2_Left
10	Ground

Power LED/Speaker

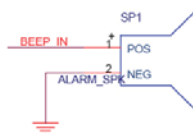
On JD1 header, pins 1~3 are used for power LED indicator and pins 4~7 are for the speaker. Connect a cable to pins 4~7 of JD1 to use an external speaker. If you wish to use the internal speaker, please close pins 6~7 with a jumper. See the tables on the right for pin definitions.

PWR LED Connector Pin Definitions	
Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 4-7	External Speaker
Pins 6-7	Internal Speaker

Internal Buzzer

The Internal Buzzer, located at SP1, can be used to provide audible alarms for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the locations of the Internal Speaker/Buzzer.



Internal Buzzer Pin Definitions		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

SMB (I²C) Connector

System Management Bus (I²C) Connector (JSMB1) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions (JSMB1)	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground

Video Connector

A Video (VGA) connector is above COM 1 on the IO backplane. This connector is used to provide video and CRT display. Refer to the board layout for the location.

Power SMB (I²C) Connector

Power System Management Bus (I²C) Connector (JPI²C) monitors power supply, fan and system temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions (J12C1)	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

Overheat LED/Fan Fail (JOH1)

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating or fan failure. This LED will blink when a fan failure occurs. Refer to the table on right for pin definitions.

Overheat LED Pin Definitions (JOH1)	
Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED Status	
State	Message
Solid	Overheat
Blinking	Fan Fail

Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. You must also have a LAN card with a Wake-On-LAN connector and a cable to use this feature. See the table on the right for pin definitions.

Wake-On-LAN Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on the rear IO panel. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions (J14)	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

5-8 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

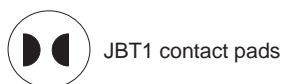
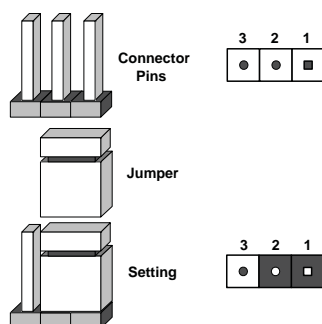
1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the serverboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note 1. For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

Note 2. Be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.

Note 3. Clearing CMOS will also clear all passwords.

Note 4: Do not use the PW ON connector to clear CMOS.



LAN Enable/Disable

JPL1 enables or disables the GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is Enabled.

LAN Enable/Disable Jumper Settings (JPL1)	
Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

Watch Dog Enable/Disable**Watch Dog Enable/Disable**

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause WD to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Enable/Disable Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: When enabled, the user needs to write their own application software in order to disable the Watch Dog Timer.

VGA Enable/Disable

Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

I²C Bus to PCI-Exp. Slots

Jumpers JI²C1 and JI²C2 allow you to connect the System Management Bus (I²C) to PCI and PCI-Express slots. These two jumpers are to be set at the same time. The default setting is Open to disable the connections. See the table on the right for jumper settings.

I2C for PCI/PCI-E slots Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (Default)

Audio Mode Select

Jumper JL2 allows you to select the Audio mode. You can choose using AC '97 Audio or HD (High-definition) Audio. The default setting is Open to use HD Audio. See the table on the right for jumper settings.

Audio Mode Select Jumper Settings	
Jumper Setting	Definition
Closed	AC'97 Panel
Open	HD Audio (Default)

Audio Enable

JPAC allows you to enable or disable the onboard audio connection. The default position is on pins 1 and 2 to enable audio support. See the table on the right for jumper settings.

Audio Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

TPM Support Enable

JPT1 allows the user to enable TPM (Trusted Platform Modules) support to enhance data integrity and system security. See the table on the right for jumper settings. The default setting is enabled. (This feature is available for the OEM only.)`

TPM Enable Jumper Setting (JPT1)	
Jumper Setting	Definition
Pins 1~2	Enabled (Default)
Pins 2~3	Disabled

Alarm Reset

If three power supplies are installed and Alarm Reset (JPRST1) is enabled, the system will notify you when any of the three power modules fails. Connect JPRST1 to a micro-switch to enable you to turn off the alarm that is activated when a power module fails. See the table on the right for jumper settings.

Alarm Reset Jumper Settings	
Pin Setting	Definition
Closed	Alarm Reset
Open	Normal

USB Wake-Up

JPUSB1/JPUSB2 jumpers allow you to "wake up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. JPUSB1 is used for Backpanel USB Ports #0~5, and JPUSB2 is for Front Panel USB Ports #6~9. These jumpers are used in conjunction with the USB Wake-Up function in the BIOS. See the table on the right for jumper settings and jumper connections. (JPUSB1: Default: Enabled, JPUSB2: Default: Disabled.)

Backpanel USB Wake-Up Enable Jumper Settings (JPUSB1)

Pin#	Definition
1-2	Enabled (default)
2-3	Disabled

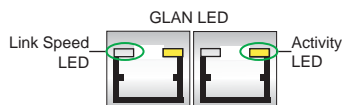
FP USB Wake-up Enable Jumper Settings (JPUSB2)

Pin#	Definition
1-2	Enabled
2-3	Disabled (Default)

5-9 Onboard Indicators

GLAN LEDs

There are two LAN ports (LAN1/2) on the motherboard. Each Ethernet LAN port has two LEDs. The Yellow LED on the right indicates connection and activity. The Link LED on the left side may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.



GLAN Activity Indicator (Right) LED Settings

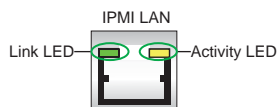
Color	Status	Definition
Off	No Connections	
Yellow	Flashing	Active

LAN Connection Speed Indicator (Left) LED Settings

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

IPMI Dedicated LAN LEDs

In addition to LAN Ports 1/2, an IPMI Dedicated LAN is also located on the I/O Backplane. The amber LED on the right indicates connection and activity; while the green LED on the left indicates the speed of the connection. See the tables at right for more information.



IPMI LAN Link/Speed LED (Left) & Activity LED (Right)		
Color	Status	Definition
Off	Off	No Connection
Green: Solid	Link/ Speed (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

Onboard Power LED

An Onboard Power LED is located at DP1 on the motherboard. When this LED is on, the system power is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator Settings	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing	ACPI S1 State

BMC Activity LED

A BMC Heartbeat LED is located at D33 on the motherboard. When D33 is on, BMC (Baseboard Management Controller) is active. See the tables at right for more information.

BMC Activity LED Indicator LED Settings	
LED Color	Definition
Green: Blinking	BMC is active

5-10 SATA Drive Connections

Serial ATA Ports

Six Serial ATA Ports (I-SATA0~I-SATA5) are located below the onboard battery on the motherboard. These ports, supported by Intel ICH10R (South Bridge), provide serial-link signal transmission, which is faster than that of the traditional Parallel ATA. See the table on the right for pin definitions.

SATA Ports Pin Definitions (SATA0-SATA5)			
Pin #	Definition	Pin #	Definition
1	Ground	5	RX_N
2	TX_P	6	RX_P
3	TX_N	7	Ground
4	Ground		

5-11 Installing Software

The Supermicro ftp site contains drivers and utilities for your system at <ftp://ftp.supermicro.com>. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at <http://www.supermicro.com/products/>. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-5 should appear.

Figure 5-5. Driver/Tool Installation Display Screen



Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

SuperDoctor III

The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figures below for examples of the SuperDoctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor III, as the SuperDoctor III settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-6. Super Doctor III Interface Display Screen (Health Information)

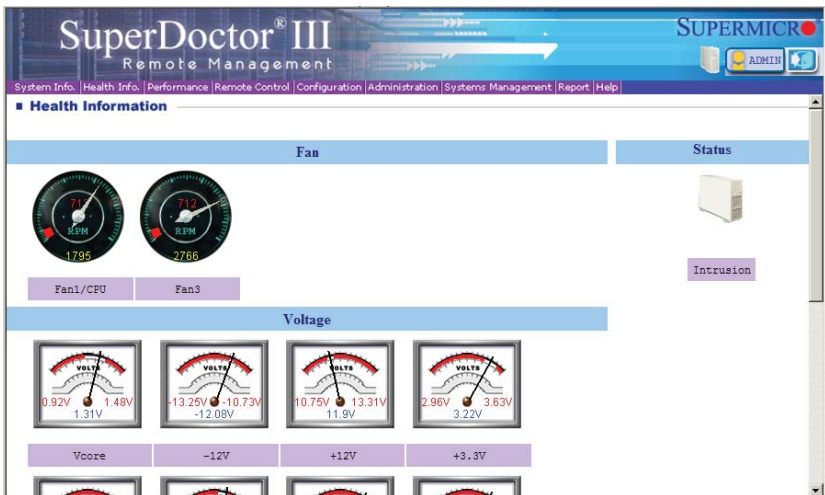
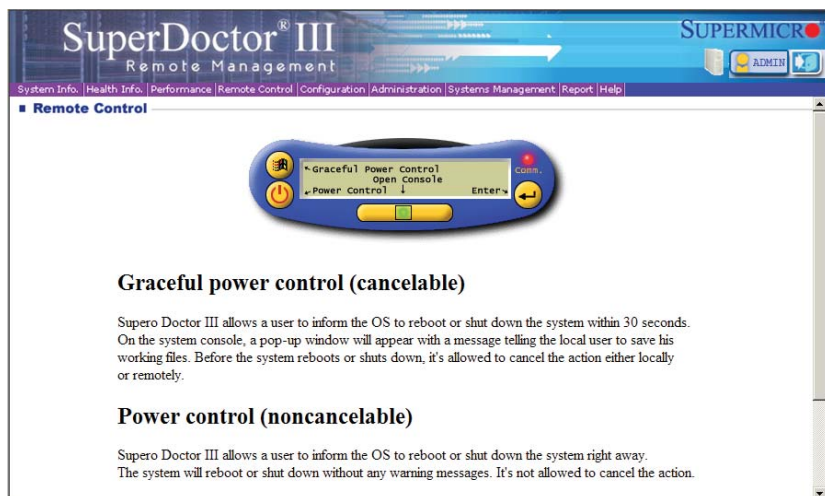


Figure 5-7. Supero Doctor III Interface Display Screen (Remote Control)

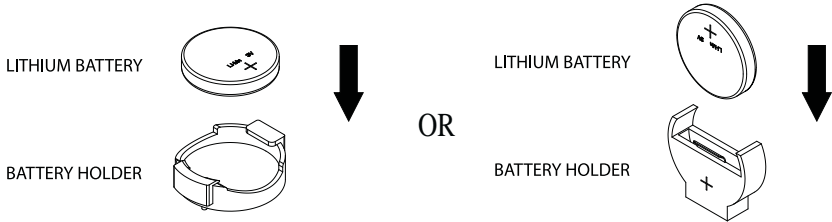


Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at <http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm>. For Linux, we recommend that you use the SuperDoctor II application instead.

5-13 Serverboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 5-8). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-8. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver. Print this page to use as a reference while setting up your chassis.

Tools Required: The only tool you will need to install components and perform maintenance is a Phillips screwdriver.

Warning: Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 4: Standardized Warning Statements for AC Systems and the warning/precautions listed in the setup instructions.

Figure 6-1. Chassis: Front and Rear Views

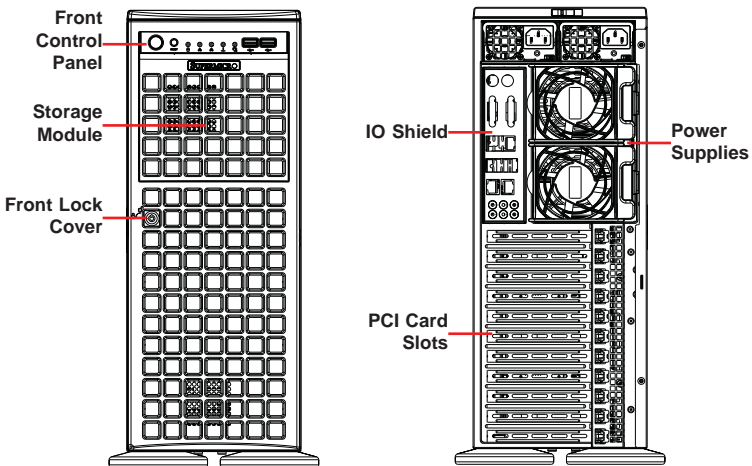
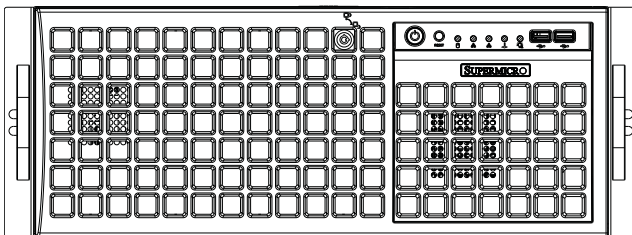


Figure 6-2: Chassis in Rack Mount Mode



6-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully.

The following measures are generally sufficient to protect your equipment from ESD damage:

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the appropriate header on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Serverboard Installation."

6-3 System Cooling

Six heavy-duty fans provide cooling for the chassis. Four fans are located in the mid-section of the chassis with two fans in the rear. These fans circulate air through the chassis as a means of lowering the chassis internal temperature.

The fans come pre-installed to the chassis. Each fan is hot-swappable and can be replaced without removing any connections.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

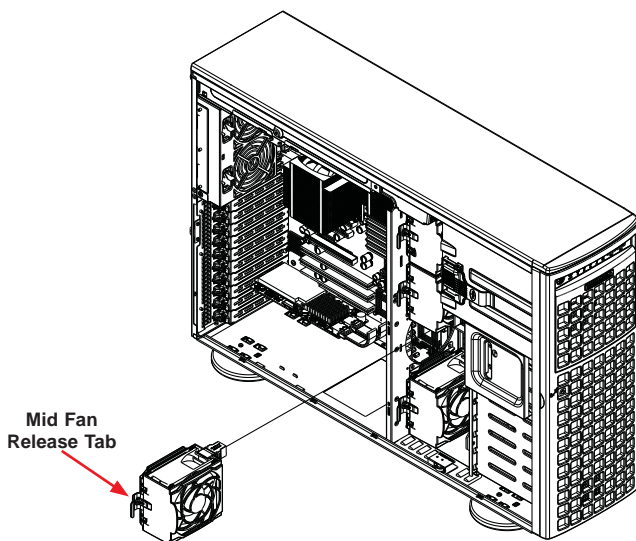
Replacing System Fans

The SC747 chassis contains two types of system fans: mid-system fans and rear system fans.

Replacing Mid-System Fans

1. Determine which fan has failed. Because the fans are hot-swappable, the chassis does not need to be powered-down.
2. Press the fan release tab and lift the failed fan from the chassis. Mid fans must be pulled straight out of the chassis (see Figure 6-3).
3. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. As soon as the fan is connected, it will begin working.

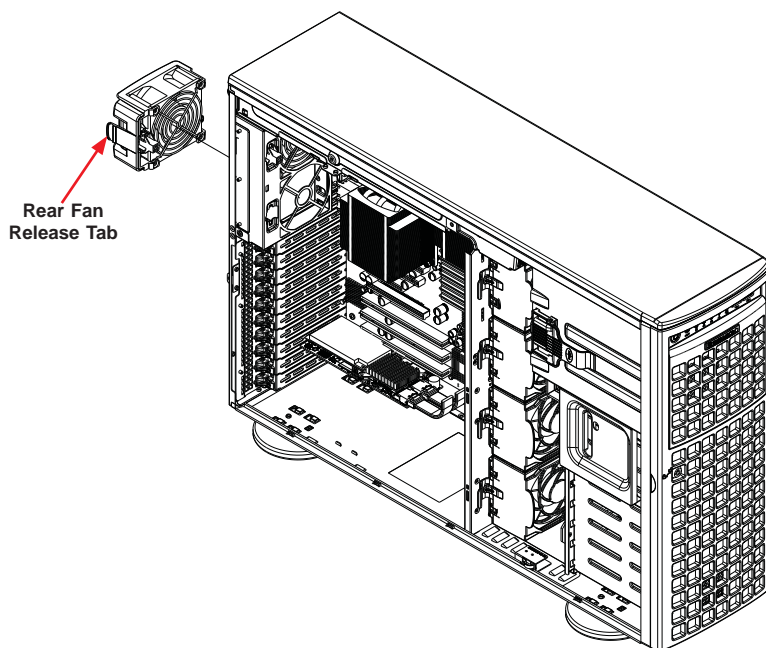
Figure 6-3: Mid-System Chassis Fans



Replacing the Rear System Fan

1. Determine which fan is not operation
2. Press the rear fan release tab (see Figure 6-4).
3. Pull the fan away from the chassis by pulling out the top first.
4. Place the new fan in the chassis, inserting the bottom of the fan first.
5. Push the fan fully into the housing until the fan clicks into place.

Figure 6-4: Rear System Chassis Fans



6-4 Configuring the the Storage Module

This section covers configuring the storage module in the SC747 chassis.

Tower or Rack Configuration

The SC747 chassis is shipped in tower mode and can be immediately used as desktop server. If the chassis is to be used in a rack, the storage module must be rotated 90 degrees and the storage module cover must be replaced (see Figure 6-6). This can be done before, during, or after setup. It is not necessary to replace the storage module cover when the chassis is in the tower configuration.

Figure 6-5: Chassis in Rack Mount Mode

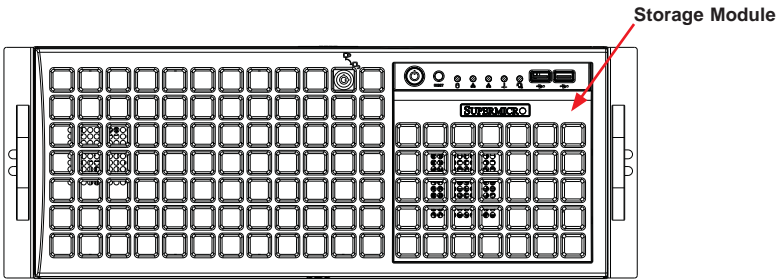
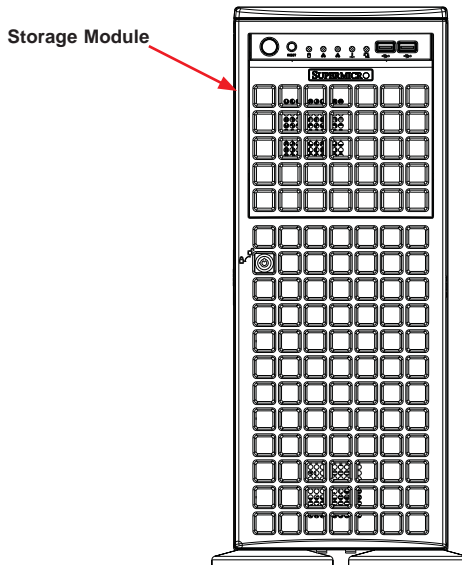


Figure 6-6: Chassis in Tower Mode



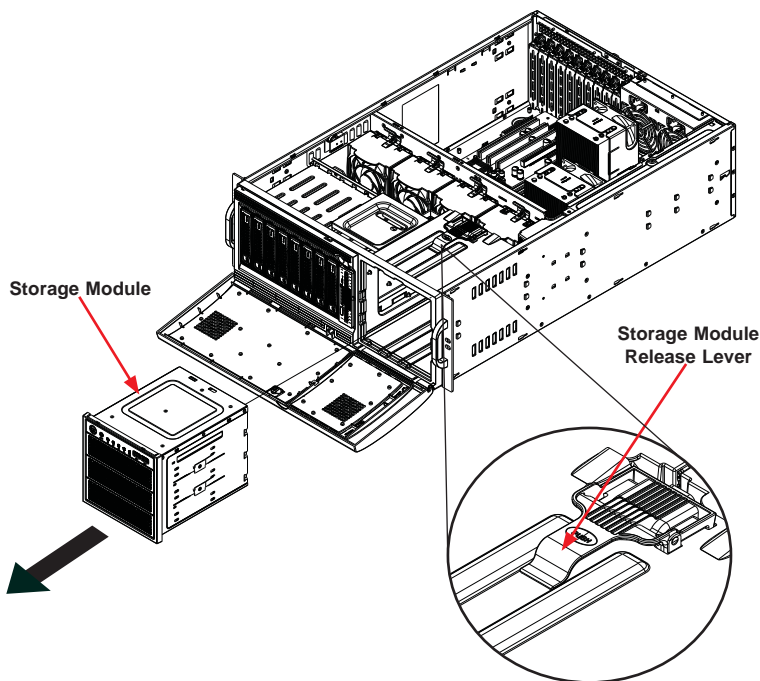
Rotating the Storage Module

Use the procedure below to rotate the storage module for rack configuration.

Rotating the Storage Module for Rack Mounting

1. Open the chassis cover.
2. Locate the storage module and disconnect any cables from the storage module to any component in the chassis.
3. Push the storage module release lever. This lever unlocks the storage module (see Figure 6-7).
4. Grasp the external edges of the storage module and pull the unit from the chassis.
5. Turn the storage module 90 degrees (as illustrated).
6. Reinsert the module into the chassis and reconnect the cords.

Figure 6-7: Removing the Storage Module

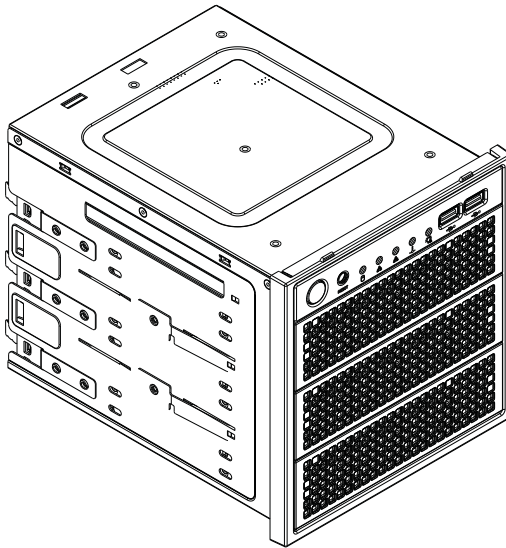


Installing Drives in the Storage Module

The storage module (Figure 6-8) includes three full sized drive bays and the front LED panel. The storage module can be configured in one of three ways:

- Add up to three extra hard drives to the drive trays.
- Add up to three peripheral drives (CD-ROM, DVD-ROM, etc.) drive trays.
- Add five hot-swappable hard drives to the storage module. This configuration requires a mobile rack. More information on mobile rack installation can be found in the appendices at the end of this manual.

Figure 6-8: Chassis Storage Module



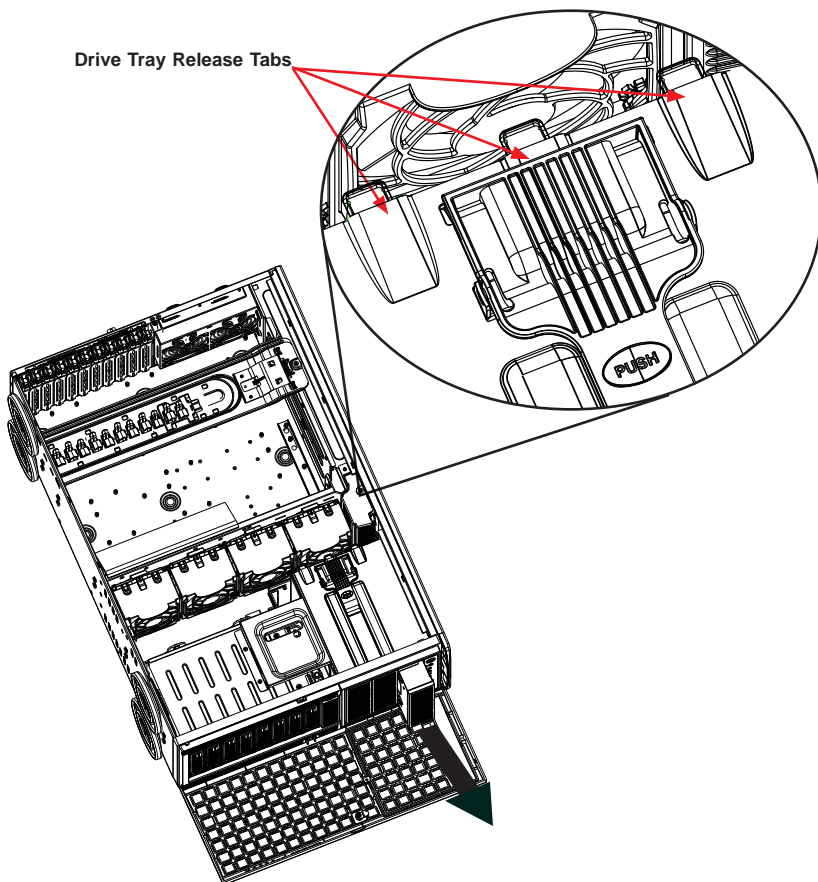
Removing a Drive Carrier

Use the procedure below to add hard drives to the drive carriers.

Adding Hard Drives to the Drive Carriers

1. Open the chassis cover.
2. Locate the drive tray release tab for the slot you want to place the peripheral drive (see Figure 6-9).

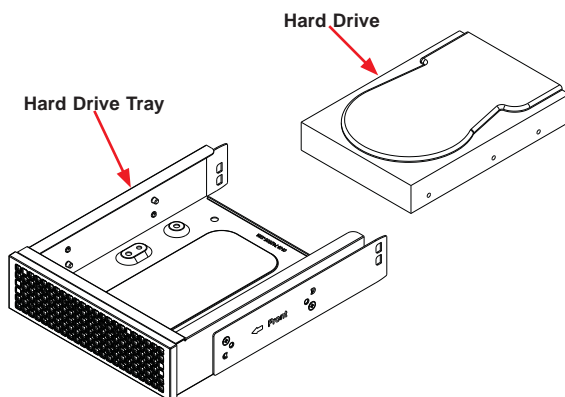
Figure 6-9: Removing a Drive Carrier



3. Push the drive tray toward the front of the chassis.
4. Place the hard drive to the hard drive tray. Make sure The hard drive can be SAS or SCSI depending on your motherboard. The hard drive may not completely fill the tray. See Figure 6-10 for details.
5. Secure the hard drive to the carrier with four screws from the bottom.
6. Slide the hard drive into the chassis until the carrier clicks into place.
7. Repeat these steps for each hard drive carrier.

Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drive carriers removed.

Figure 6-10: Adding a Hard Drive to the Drive Carrier



Warning: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at <http://www.supermicro.com/products/nfo/files/storage/SAS-ComplList.pdf>

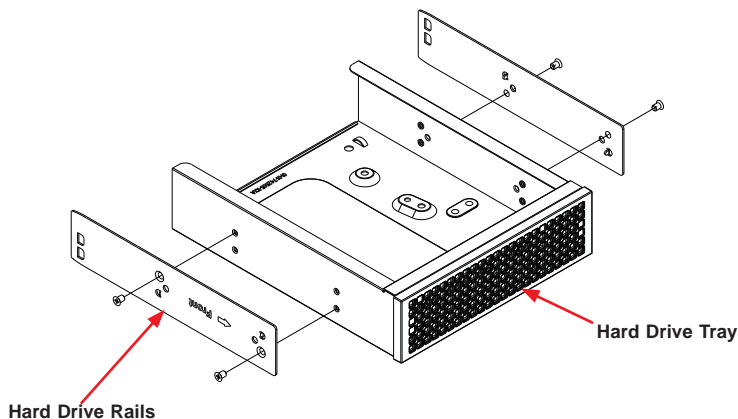
Adding Peripheral Drives

You can add up to three peripheral drives (DVD-ROM, CD-ROM, floppy drive, etc.) to the drive trays using the procedure below.

Adding Peripheral Drives

1. Open the chassis cover.
2. Locate the drive tray release tab for the slot you want to place the peripheral drive.
3. Push the drive tray toward the front of the chassis.
4. Remove the hard drive tray rails from the hard drive tray. To do this, you must remove two screws from each side (see Figure 6-11).
5. Attach the rails to a DVD-ROM, CD-ROM, floppy drive, or other peripheral. The rails should fit any standard sized peripherals.
6. Slide the peripheral into the chassis until the tray clicks into place.
7. Repeat these steps for each hard drive tray.

Figure 6-11: Adding Hard Drive Rails to the DVD-ROM Drive



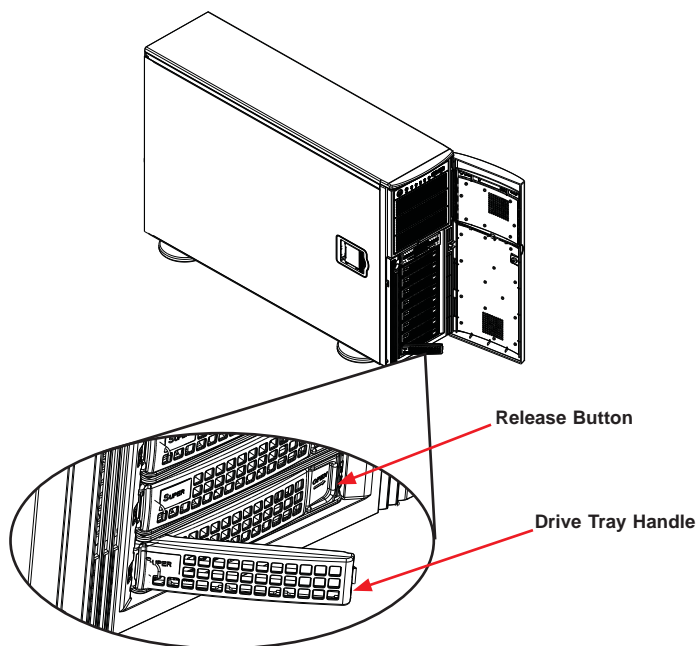
6-5 Installing Hard Drives in the Chassis

Chassis hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

Installing Hard Drives

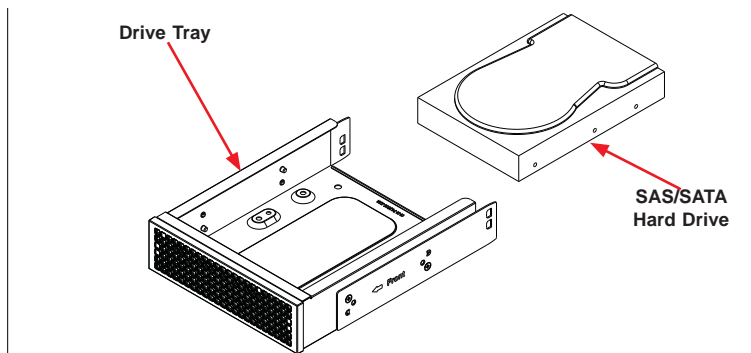
1. Unlock and open the chassis cover.
2. Press the release button to extend the drive tray handle (see Figure 6-12).
3. Using the handle, pull the drive tray out by the handle. The drive is hot swappable; there are no cables to disconnect.

Figure 6-12: Installing Hard Drives



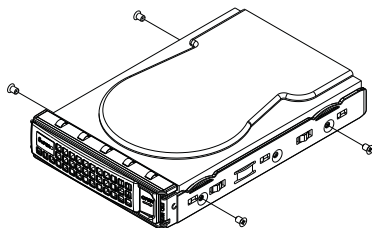
4. Remove the screws holding the drive tray to the dummy drive.
5. Place a hard drive in the drive tray (see Figure 6-13).

Figure 6-13: Removing a Dummy Drive Tray



6. Secure the hard drive to the tray using four screws (see Figure 6-14).

Figure 6-14: Installing a Hard Drive



7. Insert the hard drive into the chassis. To do this:
 - a. Press the hard drive release button to extend the drive tray handle.
 - b. Insert the hard drive into the chassis and close the handle to lock the hard drive into place (see Figure 6-12).

6-6 Adding PCI Add-On Cards

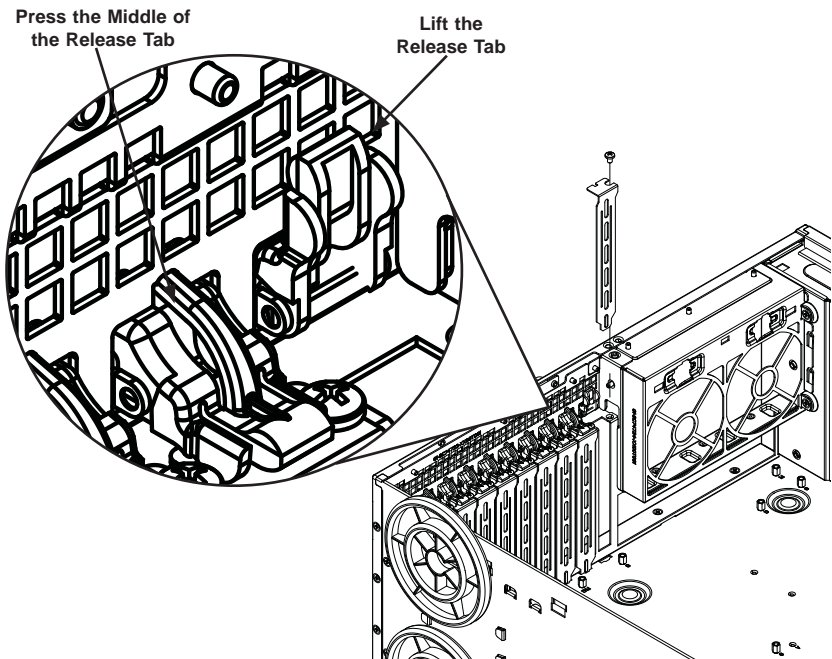
The SuperServer 7046GT-TRF series server can support four PCI-E Gen. 2.0 x16 cards (in Slot 4, Slot 6, Slot 8 and Slot 10), one PCI-E Gen. 2.0 x4 (in x16) card (Slot 2), one PCI-E 2.0 x4 (in x8) card (Slot 11), one PCI-E Gen. 1.0 x4 (in x16) card (Slot 1) and two PCI 33 MHz cards (Slot 3, Slot 5) for a total of nine (9) PCI expansion cards.

The SuperServer 7046GT-TRF series server can (in addition to four double-width GPU cards) supports one PCI-E Gen. 2.0 x4 (in x16) card (Slot 2) and one PCI-E Gen. 1.0 x4 (in x16) card (Slot 1).

Installing an Add-on Card

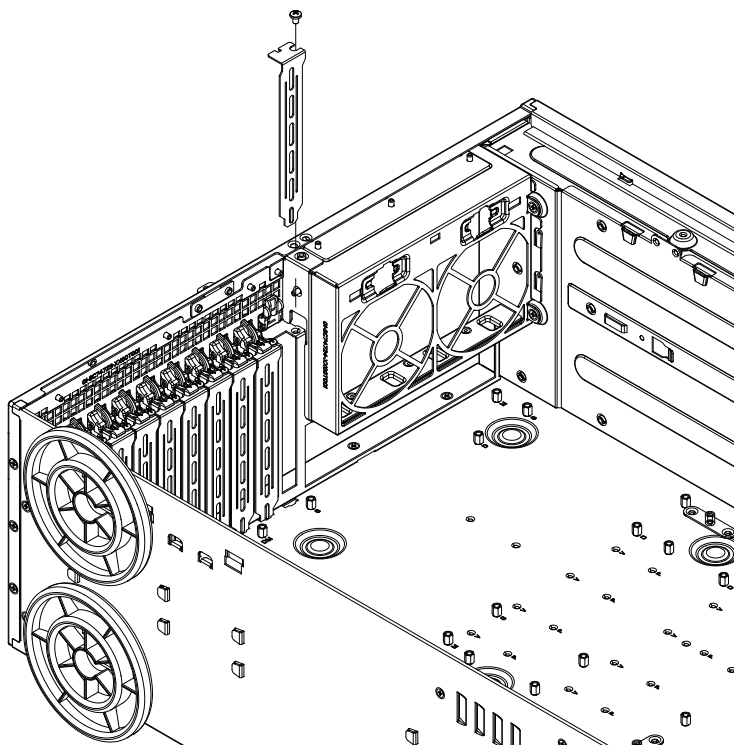
1. Locate the release tab on the top of the PCI slot bracket.
2. Gently apply pressure in the middle of the release tab to unlock the PCI slot bracket.
3. Pull the release tab upward (see Figure 6-15).

Figure 6-15: Add-on Card/Expansion Card Port



4. Remove the screw holding the bracket in place and pull the bracket from the chassis (see Figure 6-16).

Figure 6-16: Removing the PCI Card Slot Guard



5. Install your PCI card or other add-on card into the PCI slot bracket and motherboard. To do this, slide the PCI card (with "L" bracket) into the PCI slot and secure the card to the motherboard.
6. Push the PCI bracket release tab down until it locks into place with an audible "click".
7. Secure the PCI card with the screw previously removed from the chassis.
8. Repeat this process with each PCI card you want to install into the chassis.

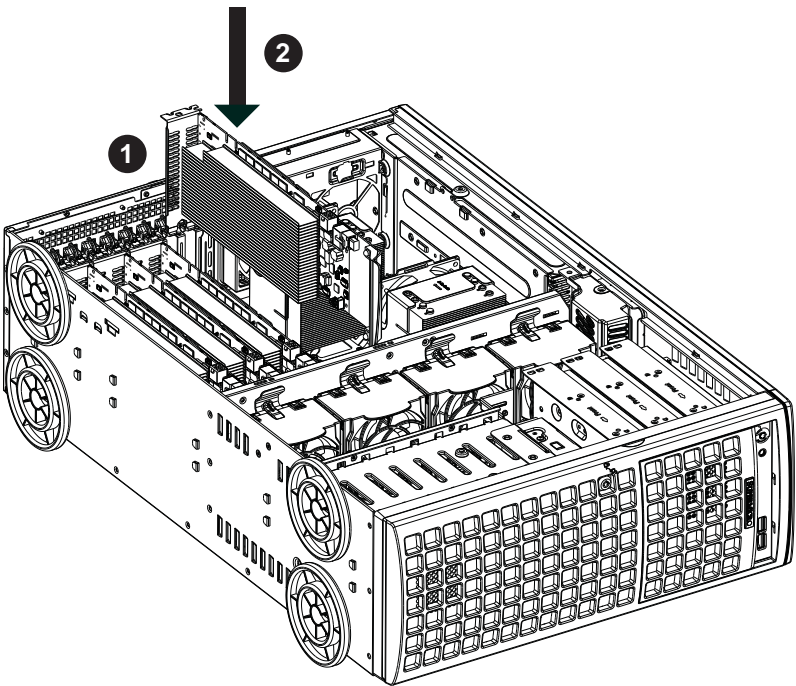
Installing Double-Width Graphics Cards

The SC747 chassis is designed to support up to four double-width, high-end graphics cards. A (part number) bracket is recommended for this application and may be purchased by visiting the Supermicro Web site at <http://www.supermicro.com> and clicking on the Where to Buy link.

Installing Double-Width Graphics Cards

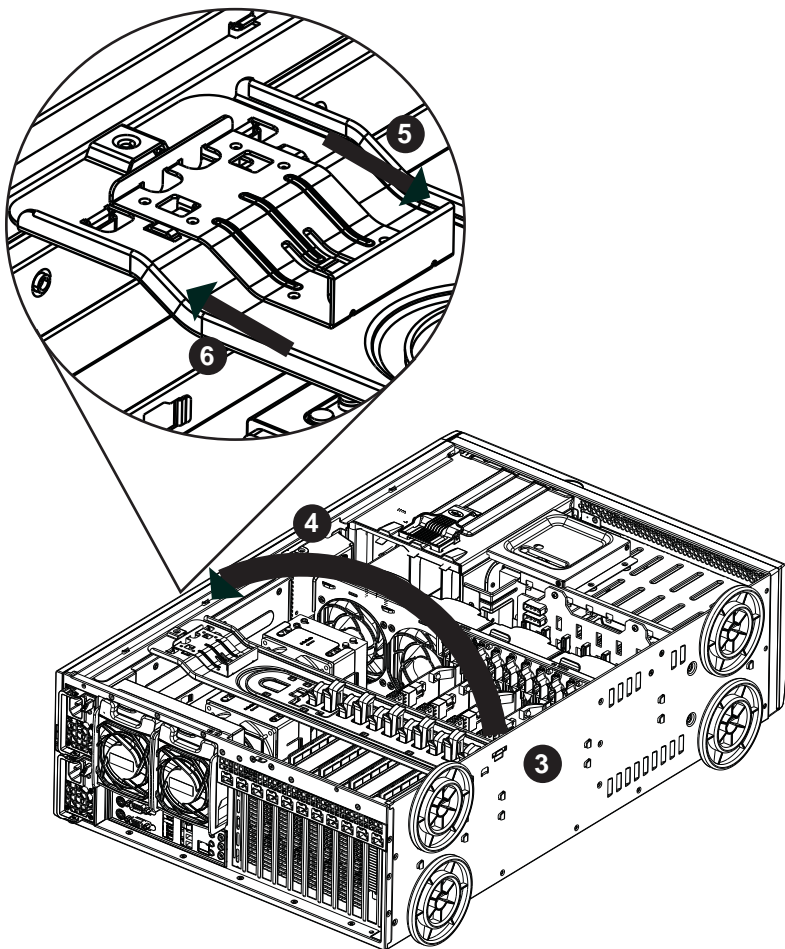
1. Insert the graphics card into the appropriate add-on card slot (Figure 6-17)
2. Slide the graphics card down onto the motherboard.

Figure 6-17: Installing Graphics Cards



3. Place the tabs of the (part number) graphics card bracket into the slots on the wall of the chassis as illustrated in Figure 6-18.
4. Lower the bracket down onto the card
5. Pull back the slide lock and lower it over the raised tab as illustrated.
6. Push the slide lock forward, allowing the pins of the slide lock to penetrate the thru holes in the raised tab.

Figure 6-18: Closing the Graphics Card Bracket



6-7 Power Supply

The SC747 chassis has a 1400 Watt (redundant) power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Failure

If the power supply module fails, the system will shut down and you will need to replace the module. Replacements can be ordered directly from Supermicro (see contact information in the Preface).

As there is only one power supply module in the system, power must be completely removed from the server before removing and replacing the power supply for whatever reason.

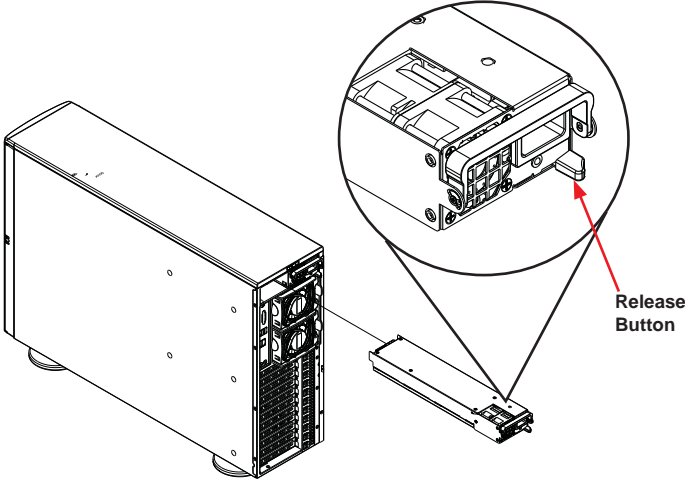
Replacing the Power Supply

With a redundant power supply, the system automatically switches to the second power supply if the first should fail.

Replacing the Power Supply

1. Power down the chassis and unplug the power cord. If your chassis includes a redundant power supply (at least two power modules), you can leave the server running and remove only one power supply.
2. Push the release tab (on the back of the power supply) as illustrated in Figure 6-19.
3. Pull the power supply out using the handle provided.
4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until you hear a click.
6. Plug the AC power cord back into the module and power up the server.

Figure 6-19: Power Supply Release Button



Power Supply Connections

Connect each of the following cables, as required, by your motherboard manufacturer. In some instances, some cables may not need to be connected. Some cables may not be available with your model.

Power Supply Cables			
Name	Qty	Connects to:	Description
20-pin or 24-pin power cable	1	Motherboard	20-pin or 24-pin power cable provides electricity to the motherboard, and has twenty to twenty-four yellow, black, gray, red, orange, green and blue wires.
HDD (Hard Drive) power cable	2	Backplane	Each cable has three connectors (two Hard Drive [HDD] and one Floppy Drive [FDD]). Attach the HDD connectors to the backplane. If you are using a Supermicro backplane, the FDD connector does not need to be attached.
8-pin motherboard cable	1	Motherboard	Provides power to the motherboard CPU. This cable has two black and two yellow wires.
4-pin motherboard cable	1	Motherboard	Provides power to PCI expansion card. This cable has two black and two yellow wires.
5-pin SMBus power cable (small)	1	Motherboard	Allows the SM (System Management) bus to monitor power supply
2-pin INT cable	1	Motherboard	Intrusion detection cable allows the system to log when the server chassis has been opened.

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X8DTG-QF. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note:** the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing at the appropriate time during system boot.

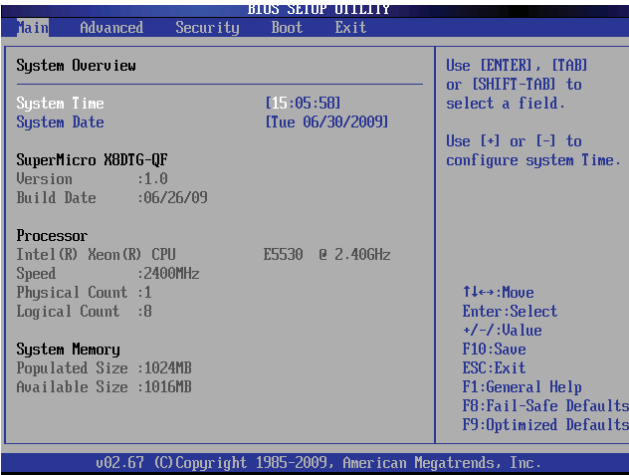
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview

The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format. **(Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X8DTG-QF

- BIOS Build Version: This item displays the BIOS revision used in your system.
- BIOS Build Date: This item displays the date when this BIOS was completed.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

- CPU Type: This item displays the type of CPU used in the motherboard.
- Speed: This item displays the speed of the CPU detected by the BIOS.
- Physical Count: This item displays the number of processors installed in your system as detected by the BIOS.
- Logical Count: This item displays the number of CPU Cores installed in your system as detected by the BIOS.

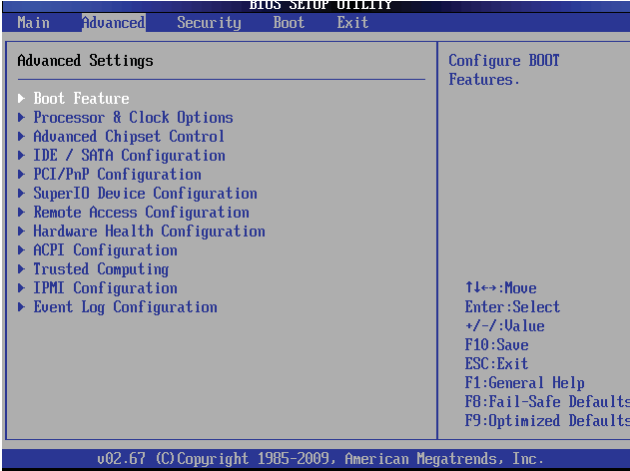
System Memory

This displays the size of memory available in the system:

- Populated Size: This item displays the memory size installed on the motherboard as detected by the BIOS.
- Available Size: This item displays the amount of memory available.

7-3 Advanced Setup Configurations

Use the arrow keys to select the Boot Setup submenu, and hit <Enter> to access the following items:



► Boot Features

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

This sets the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM Display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature allows the user to select the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Hit 'Del' Message Display

This feature displays "Press DEL to run Setup" during POST. The options are **Enabled** and Disabled.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled**.

Power Button Function

If set to Instant_Off, the system will power off immediately as soon as the user hits the power button. If set to 4_Second_Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant_Off** and 4_Second_Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

EUP Support

Select Enabled to supply standby power to the system while in S5 state to fulfill the EUP requirements. Select Disabled to use the "wake-up" feature while the system is in S5 state. The options are Enabled and **Disabled**.

► Processor and Clock Options

This submenu allows the user to configure the Processor and Clock settings.

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and **Enabled**.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware pre fetcher will pre fetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are **Disabled** and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

MPS and ACPI MADT Ordering

This feature allows you to choose the method of ordering for the Multiple APIC Description Table (MADT). Select Modern Ordering for Microsoft Windows XP or later, Select Legacy Ordering for Microsoft Windows 2000 or earlier. The options are **Modern Ordering** and **Legacy Ordering**.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and **Disabled**.

Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Simultaneous Multi-Threading (Available when supported by the CPU)

Set to Enabled to use the Simultaneous Multi-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All**, 1 and 2.

Intel® EIST Technology

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disable (Disable GV3) and **Enable (Enable GV3)**.

Intel® TurboMode Tech.

Select Enabled to allow the processor cores to run faster than normal under special circumstances to improve performance. The options are Disable and **Enabled**.

C1E Support

Select Enabled to use the feature of Enhanced Halt State. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a Halt State. The options are Disabled and **Enabled**.

Intel® C-State Tech

If enabled, C-State is set by the system automatically to either C2, C3 or C4 state. The options are Disabled and **Enabled**.

C-State package limit setting (Available when Intel® C-State Tech is enabled)

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **Auto**, C1, C3, C6 and C7.

C1 Auto Demotion

When enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 based on un-core auto-demote information. The options are Disabled and **Enabled**.

C3 Auto Demotion

When enabled, the CPU will conditionally demote C6 or C7 requests to C3 based on un-core auto-demote information. The options are Disabled and **Enabled**.

ACPI T State

Select Enabled to report processor throttling in ACPI. The options are Disabled and Enabled.

► Advanced Chipset Control

The items included in the Advanced Settings submenu are listed below:

► CPU Bridge Configuration

QPI Links Speed

This feature selects QPI's data transfer speed. The options are Slow-mode, and **Full Speed**.

QPI Frequency (Available when QPI Links Speed is set to 'Full Speed')

This selects the desired QPI frequency. The options are **Auto**, 4.800 GT, 5.866GT, 6.400 GT.

QPI L0s and L1

This enables the QPI power state to low power. L0s and L1 are automatically selected by the motherboard. The options are **Disabled** and Enabled.

Memory Frequency

This feature forces a DDR3 frequency slower than what the system has detected to run at the frequency as specified. The available options are **Auto**, Force DDR-800, Force DDR-1066, Force DDR-1333 and Force SPD.

Memory Mode

The options are **Independent**, Channel Mirroring, and Lockstep.

Independent - All DIMMs are available to the operating system.

Channel Mirroring - The motherboard maintains two identical copies of all data in memory for redundancy.

Lockstep - The motherboard uses two areas of memory to run the same set of operations in parallel.

Demand Scrubbing

This is a memory error-correction scheme that allows the processor to write corrected data back into the memory block from where it was read by the Processor. The options are Enabled and **Disabled**.

Patrol Scrubbing

This is a memory error-correction scheme that works in the background looking for and correcting resident errors. The options are Enabled and **Disabled**.

Throttling - Closed Loop

Throttling improves reliability and reduces power in the processor by automatic voltage control during processor idle states. Available options are Disabled and **Enabled**.

► North Bridge Configuration

This feature allows the user to configure the settings for the Intel North Bridge.

Intel I/O AT

This feature works with the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (**Note:** A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card.) When this feature is set to Enabled, it will enhance overall system performance by providing direct memory access for data transferring. The options are **Enabled** and Disabled.

DCA (Direct Cache Access) Technology (Available when Intel I/O AT is enabled)

This feature works in conjunction with the Intel I/O AT (Acceleration Technology) to accelerate the performance of the TOE device. When this feature set to Enabled, it will enhance overall system performance by providing direct cache access for data transferring. The options are **Enabled** and Disabled.

DCA Prefetch Delay

A DCA Prefetch is used with TOE components to prefetch data in order to shorten execution cycles and maximize data processing efficiency. Prefetching too frequently can saturate the cache directory and delay necessary cache accesses. This feature reduces or increases the frequency the system prefetches data. The options are [8], [16], [24], **[32]**, [40], [48], [56], [64], [72], [80], [88], [96], [104], [112], [120]

Intel VT-d

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

Active State Power Management

Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and **Disabled**.

IOH PCIE Max Payload Size

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128B; while others, with a payload size of 256B which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are **256B** and 128MB.

► South Bridge Configuration

This feature allows the user to configure the settings for the Intel South Bridge.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are: Disabled, and **Enabled**. (If this item is set to Enabled, USB 2.0 Controller will be enabled.)

Legacy USB Support

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vice versa. The settings are Disabled, **Enabled** and Auto.

USB 2.0 Controller

Select Enabled to activate USB 2.0 Controller. The options are **Enabled** and Disabled. (**Note:** If the item - USB Functions is enabled, USB 2.0 Controller will always be enabled. When the item - USB Functions is set to Disabled, the user has the option to enable or disable USB 2.0 Controller.)

USB 2.0 Controller Mode

This setting allows you to select the USB 2.0 Controller mode. The options are **Hi-Speed (480 Mbps)** and Full Speed (12 Mbps).

BIOS EHCI Hand-Off

Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not have EHCI Hand-Off support. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and **Enabled**.

HDA Controller

Select Enabled to activate the onboard High-Definition Audio controller. The options are **Enabled** and Disabled.

Frontside Audio Mode

Select HD Audio to enable high-definition audio support for frontside audio. Select AC'97 to use AC'97 for frontside audio. The options are **HD Audio** and AC'97.

Route Port 80h Cycle to

Use this item to decide where to route Port 80h Cycle to. The Options are **LPC** and PCI.

► IDE/SATA/Floppy Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE devices and displays the following items:

SATA#1 Configuration

If Compatible is selected, it sets SATA#1 to legacy compatibility mode, while selecting Enhanced sets SATA#1 to native SATA mode. The options are Disabled, Compatible and **Enhanced**.

Configure SATA#1 as (Not available when SATA#1 Configuration is disabled)

This feature allows the user to select the drive type for SATA#1. The options are **IDE**, RAID and AHCI. (When the option-RAID is selected, the item-ICH RAID Code Base will appear. When the option-AHCI is selected, the item-ICH AHCI Codebase will be available.)

ICH RAID Code Base (Available when the option-RAID is selected.)

Select Intel to enable Intel's SATA RAID firmware to configure Intel's SATA RAID settings. Select Adaptec to enable Adaptec's SATA RAID firmware to configure Adaptec's SATA RAID settings. The options are **Intel** and Adaptec.

ICH AHCI Codebase (Available when the option-AHCI is selected.)

Use this feature to select the AHCI Codebase for the ICH South Bridge. The options are BIOS Native Module and **Intel AHCI ROM**.

SATA#2 Configuration (This feature is available when the option-IDE is selected)

Selecting Enhanced will set SATA#2 to native SATA mode. The options are Disabled, and **Enhanced**.

IDE Detect Timeout (sec)

Use this item to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master

These settings allow the user to set the parameters of the IDE slots as specified. Press <Enter> to activate the following submenu items. Set the correct configurations accordingly.

Type

This feature allows the user to select the type of device connected to the slot. Select Auto to allow the BIOS to automatically select the device type as it is detected on the slot. Select CD/DVD to configure the slot for CD/DVD devices. Select ARMD to use this slot for removable devices. The options are Not Installed, **Auto**, CD/DVD and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MB/s.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MB/s.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MB/s.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MB/s.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer bandwidth of 32-Bits. Select Enabled to enable 32-Bit data transfer.

DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined.

Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MB/s.

Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MB/s.

Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MB/s.

Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MB/s.

Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MB/s.

Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MB/s.

Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MB/s. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MB/s.

Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MB/s.

Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 44.4 MB/s.

Select UDMA4 to allow the BIOS to use Ultra DMA mode 4. It has a data transfer rate of 66.6 MB/s.

Select UDMA5 to allow the BIOS to use Ultra DMA mode 5. It has a data transfer rate of 100 MB/s.

Select UDMA6 to allow the BIOS to use Ultra DMA mode 6. It has a data transfer rate of 133 MB/s. The options are **Auto**, SWDMAn, MWDMAAn, and UDMAAn.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically detect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32Bit Data Transfer

Select Enable to enable 32-bit IDE data transferring support. The options are **Enabled** and Disabled.

► PCI/PnP Configuration

Clear NVRAM

This feature clears the NVRAM during system boot. The options are **No** and Yes.

Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE BusMaster

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are Disabled and **Enabled**.

SR-IOV Support

Single Root I/O Virtualization is an industry-standard mechanism that allow devices to advertise their capability to be simultaneously shared among several virtual machines. SR-IOV is capable of partitioning a PCI function into several virtual interfaces for sharing the resources of a PCI Express device under a virtual environment. The options are **Disabled** and Enabled.

PCI-E Slot 1 x4 (in x16 slot), PCI-E Slot 2 x4 (in x16 slot), PCI Slot 3 33MHz, PCI-E Slot 4 x16, PCI Slot 5 33MHz, PCI-E Slot 6 x16, PCI-E Slot 8 x16, PCI-E Slot 10 x16, PCI-E Slot 11 x4 (in x8 Slot)

Use this setting to enable or disable any of the PCI slots indicated above. The options are Disabled and **Enabled**.

Onboard LAN Option ROM 1 Select

The item selects the type of onboard option ROM to load. The options are **PXE** and iSCSI.

Load Onboard LAN 1 Option ROM/Load Onboard LAN 2 Option ROM

Select Enabled to enable onboard LAN1/LAN2 Option ROMs support which will allow you to boot your systems using a network interface. The options are Enabled and **Disabled**.

Boot Graphics Adapter Priority

This feature allows the user to specify which graphics controller to be used as the primary boot graphics controller. The options are **Onboard VGA**, Slot 6 and Offboard VGA.

► Super IO Device Configuration**Serial Port1 Address/IRQ, Serial Port2 Address/IRQ**

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3 and 2F8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4, 3F8/IRQ4, and 2E8/IRQ3.

Serial Port 2 Attribute

This feature enables COM2 to act as a virtual COM Port for Serial Over LAN (SOL). The options are COM and **SOL**.

► Remote Access Configuration

Remote Access

This allows the user to enable Remote Access support. The options are Disabled and **Enabled**. If Remote Access is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user decide which serial port to be used for Console Redirection. The options are COM 1 and **COM2**.

Base Address, IRQ

This item displays the base address and IRQ of the serial port used for Console Redirection. This setting is configured via the item-Serial Port 1 Address/IRQ or Serial Port 2 Address/IRQ in the Super I/O submenu.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, n 1**; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are ANSI, **VT100**, and VT-UTF8.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay**, Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

► Hardware Health Configuration

This feature allows the user to monitor system health and review the status of each item as displayed.

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning!

1. Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.
2. To avoid possible system overheating, please be sure to provide adequate airflow to your system.

The options are:

- **The Early Alarm:** Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.
- **The Default Alarm:** Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5°C above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

CPU 1 Temperature/CPU 2 Temperature/IOH1 Temperature/IOH2 Temperature/System Temperature

This feature displays current temperature readings for the CPU and the System.

The following items will be displayed for your reference only:

CPU 1 Temperature/CPU 2 Temperature

The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading. The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.

Notes:

1. The system may shut down if it continues for a long period to prevent damage to the CPU.
2. The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

IOH1 Temperature/IOH2 Temperature/System Temperature

The temperature for each sensor indicated will be displayed (in degrees in Celsius and Fahrenheit) as detected by the BIOS.

Fan1 ~ Fan 10 Reading

This feature displays the fan speed readings from Fan1 through Fan8. (Fan1 is CPU1 Fan and Fan2 is CPU2 Fan.)

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. The Options are: Full Speed/FS, Performance/PF, **Balanced/BL**, and Energy Saving/ES.

Select "Full Speed/FS" to allow the onboard fans to run at full speed for maximum cooling. The FS setting is recommended for special system configuration or debugging.

Select "Performance/PF" for better system cooling. The PF setting is recommended for high-power-consuming and high-density systems.

Select "Balanced/BL" for the onboard fans to run at a speed that will balance the needs between system cooling and power saving. The BL setting is recommended for regular systems with normal hardware configurations.

Select "Energy Saving/ES" for best power efficiency and maximum quietness.

Voltage Monitoring

CPU1 Vcore, CPU2 Vcore, CPU1 VTT, CPU2 VTT, CPU1 DDR3, CPU2 DDR3, ICH 1.5V, IOH 1.8V, 5V, 12V, -12V, 3.3V, 3.3Vsb, Vbat, IOH 1.1V

► ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

High Precision Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

USB Device Wake-Up

Select Enabled for the system to wake up from Standby mode by a Universal Serial Bus (USB) device (such as, a USB mouse or USB keyboard). The options are Enabled and **Disabled**.

ACPI Aware O/S

Enable ACPI support if it is supported by the OS to control ACPI through the Operating System. Otherwise, disable this feature. The options are **Yes** and No.

Suspend Mode (Available ACPI Aware O/S='Yes')

This setting allows you to configure the ACPI (Advanced Configuration and Power Interface) state for your system when it is in the Suspend mode. The options are **S1 (POS)**, S3 (STR) and Auto.

ACPI APIC Support (Available ACPI Aware O/S='Yes')

Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are **Enabled** and Disabled.

APIC ACPI SCI IRQ

When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and **Disabled**.

Headless Mode (Available ACPI Aware O/S='Yes')

This feature is used to enable system to function without a keyboard, monitor or mouse attached. The options are Enabled and **Disabled**.

ACPI Version Features (Available ACPI Aware O/S='Yes')

The options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0. Please refer to ACPI's website for further explanation: <http://www.acpi.info/>.

NUMA Support

If enabled, Non-Uniform Memory Access will enhance CPU performance. The options are **Enabled**, Disabled and NUMA for SLES11 (SUSE Linux Enterprise Server 11).

► Trusted Computing (Available for OEM Only.)

TCG/TPM Support

Select Yes to enable support for trusted platforms (TPM 1.1/1.2) and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Yes and **No**.

Indicate Physical

This feature Enables indication of physical presence to the TPM device each time the system starts. The options are **No** and Yes.

TPM Deactivated/Activated

This feature activates or disables the TPM device. The options are **Don't Change**, Set and Clear.

TPM Owner

This feature installs or clears TPM ownership The options are **Don't Change**, Enable Install, Disable Install and Clear.

Execute TPM Command

This feature Enables or Disables the sending of commands to the TPM. The options are **Don't Change**, Enabled and Disabled.

Clear the TPM

Press <Enter> to clear the TPM memory. This will erase all information related to TPM support.

If TCG/TPM Support is set to Yes, the TPM Status will display:

TPM Enable/Disable Status

TPM Owner Status

► IPMI Configuration

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that are used for hardware health monitoring and system management. For more information on the IPMI specifications, please visit Intel's web site at www.intel.com.

IPMI Firmware Revision

This item displays the IPMI firmware revision used in your system.

Status of BMC

Baseboard Management Controller (BMC) manages the interface between system management software and platform hardware. This is an informational feature which returns the status code of the BMC micro controller.

► View BMC System Event Log

This feature displays the BMC System Event Log (SEL). It shows the total number of entries of BMC System Events. To view an event, select an Entry Number and pressing <Enter> to display the information as shown in the screen.

- SEL Entry Number
- SEL Record ID
- SEL Record Type
- Event Timestamp
- Generator ID
- Event Message Format Ver
- Event Sensor Type
- Event Sensor Number,
- Event Dir Type
- Event Data.

Clear BMC System Event Log

Clear BMC System Log

Select OK and press the <Enter> key to clear the BMC system log. Select Cancel to keep the BMC System log. The options are **OK** and Cancel.

Warning: Any cleared information is unrecoverable. Make absolutely sure that you no longer need any data stored in the log before clearing the BMC Event Log.

► Set LAN Configuration

Set this feature to configure the IPMI LAN adapter with a network address as shown in the following graphics.

Channel Number - This feature displays the channel number.

Channel Number Status - This feature returns the channel status for the Channel Number selected above: "Channel Number is OK" or "Wrong Channel Number".

IP Address Source

This feature allows the user to select the source of the IP address for the system. If Static is selected, the user will need to manually enter the IP address for the system. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that the system is attached to, and request the next available IP address. The options are **DHCP** and Static. If Static is selected, the following items will be available for configuration.

IP Address

The BIOS will automatically enter the IP address of this machine; however it may be over-ridden. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

Subnet Mask

This item displays the current subnet mask setting for your IPMI connection. The value of each three-digit number separated by dots should not exceed 255.

Gateway Address

The BIOS will automatically enter the Gateway address of this machine; however it may be over-ridden. Gateway addresses are 4-decimal numbers in dotted quad form (i.e., 192.168.10.253). The value of each 3-digit number separated by dots should not exceed 255.

Mac Address

The BIOS will automatically enter the Mac address of this machine; however it may be over-ridden. Mac addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots. (i.e., 00.30.48.D0.D4.60).

► Event Log Configuration

View Event Log

Use this option to view the System Event Log.

Mark all events as read

This option marks all events as read. The options are **OK** and **Cancel**.

Clear event log

This option clears the Event Log memory of all messages. The options are **OK** and **Cancel**.

PCIe Error Log

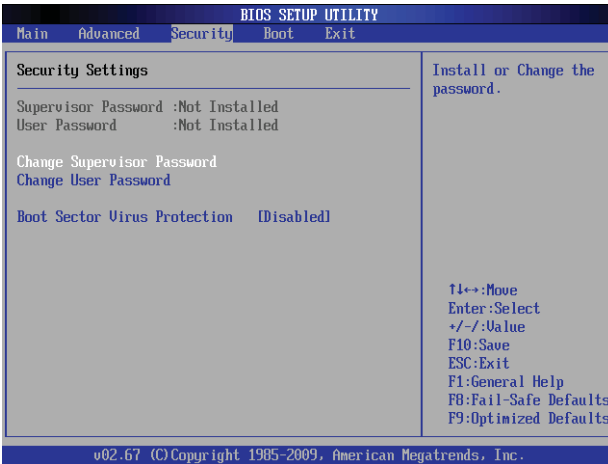
Use this option to enable logging of PCIe Errors. The options are **Yes** and **No**.

Memory ECC Error Log

Select **Yes** to enable ECC memory error logging . The options are **Yes** and **No**.

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Supervisor Password

This item indicates if a Supervisor password has been entered for the system. "Not Installed" means a Supervisor password has not been used.

User Password

This item indicates if a user password has been entered for the system. "Not Installed" means that a user password has not been used.

Change Supervisor Password

Select this feature and press <Enter> to access the submenu, and then enter a new Supervisor Password.

User Access Level (Available when Supervisor Password is set as above)

Use this feature to set the user's access level. Select **Full Access** to grant the user full read and write access to the Setup Utility. Select **View Only** to allow the user to view the Setup Utility displays without making any changes. Select **Limited** to allow the user to make changes on limited items such as Date and Time, Select **No Access** to prevent the user from entering the Setup Utility.

Change User Password

Select this feature and press <Enter> to enter a new User Password.

Clear User Password (Available only if User Password has been set)

This item allows you to clear a user password after it has been entered.

Password Check

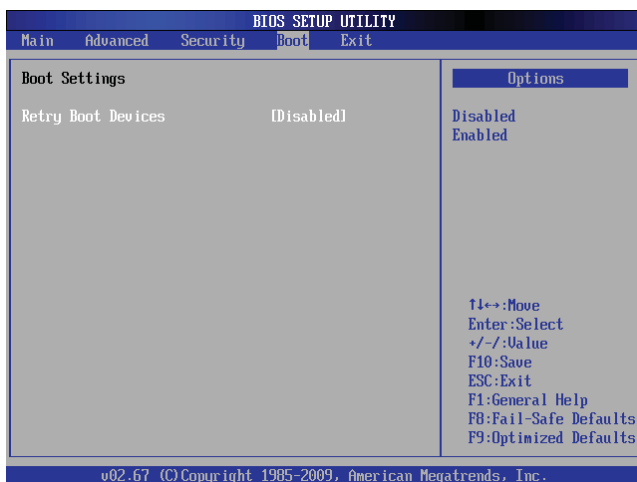
This item allows you to check a password after it has been entered. The options are **Setup** and **Always**.

Boot Sector Virus Protection

When Enabled, the AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are **Enabled** and **Disabled**.

7-5 Boot Configuration

Use this feature to configure boot priority settings.



► Boot Device Priority

Use this feature to specify the sequence of boot priority for onboard devices. The settings are 1st boot device–5th boot device and Disabled.

1st Boot Device - 1st Floppy Drive/2nd Boot Device - [USB: XXXXXXXXXX]

► Hard Disk Drives

Use this feature to specify the boot sequence from all bootable HDD devices. The settings are Disabled and a list of all hard disk drives that have been detected (i.e., 1st Drive, 2nd Drive, etc).

► Removable Drives

Use this feature to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.

► CD/DVD Drives

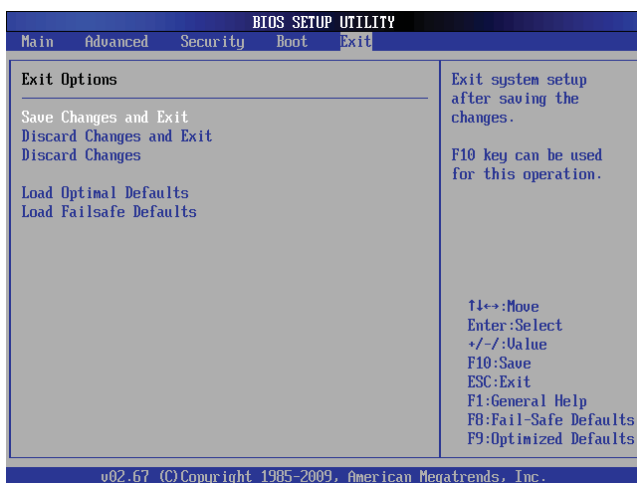
This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).

Retry Boot Devices

Select Enabled to enable Retry Boot Devices support to allow the system to attempt to boot from a specific boot device after a boot failure. The options are Enabled and **Disabled**.

7-6 Exit Options

Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

4-7 BIOS Recovery

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

How to Recover the AMIBIOS Image (-the Main BIOS Block)

An AMIBIOS flash chip consists of a boot sector block, and a main BIOS code block (a main BIOS image). The boot sector block contains critical BIOS code, including memory detection and recovery code to be used to flash a new BIOS image if the original BIOS Image is corrupted. When the system is powered on, the boot sector code executes first. Once it is completed, the main BIOS code will continue with system initialization and complete the bootstrap process.

Notes: BIOS Recovery described below is used when the main BIOS block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repairs.

4.7.1 Boot Sector Recovery from a USB Device

This feature allows the user to recover a BIOS image using a USB device without additional utilities needed. A user can download the BIOS image into a USB flash device, and name the file "SUPER.ROM" for the recovery process to load the file. A USB flash device such as a USB Flash Drive, a USB CDRW or a USB CDRW device can be used for this purpose,

3. Insert the USB device that contains the new BIOS image (the ROM files) saved in a root directory into your USB drive.

4. While turning the power on, press and hold <Ctrl> and <Home> at the same time until the USB Access LED Indicator comes on. This might take a few seconds.
5. Once the USB drive LED is on, release the <Ctrl> and <Home> keys. AMIBIOS will issue beep codes to indicate that the BIOS ROM file is being updated.
6. When BIOS flashing is completed, the computer will reboot. Do not interrupt the flashing process until it is completed.

4.7.2 Boot Sector Recovery from an IDE CD-ROM

This process is almost identical to the process of Boot Sector Recovery from a USB device, except that the BIOS image file is loaded from a CD-ROM. Use a CD-R or CD-RW drive to burn a CD with the BIOS image file in it, and name the file "SUPER.ROM" for the recovery process to load the file.

4.7.3 Boot Sector Recovery from a Serial Port ("Serial Flash")

This process, also known as "Serial Flash," allows the user to use a serial port to load a BIOS image for Boot Sector recovery. This feature is usually used for embedded systems that rely on a serial port for remote access and debugging.

Requirements

In order to use Serial Flash for Boot Sector Recovery, you will need to meet the following requirements.

- The "Target system," the system that needs BIOS updates, must have a serial port and "Serial Flash" support embedded in the BIOS image file.
- The "Host system" should also have a serial port and a terminal program that supports XModem Transfer protocol (Hyper Terminal for the Windows operating systems, and minicom for Linux/FreeSBD, etc.).
- A Null_modem serial cable

How to use Serial Flash for Boot Sector Recovery

1. Connect a Null_modem serial cable between the target system and the host system that runs the terminal program.
2. Make sure that the new BIOS Image file is accessible for the host system.

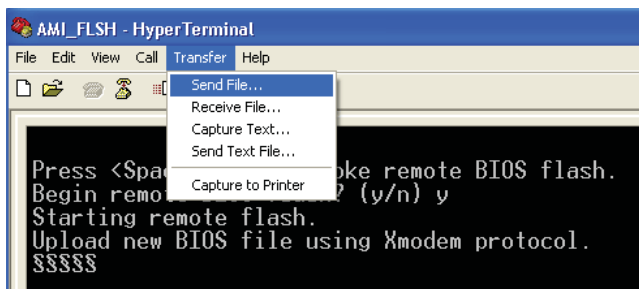
3. Start the terminal program on the host system and create a new connection. Use the following communication parameters for the new connection.
 - Bits per second: 115200 bits/sec.
 - Data Bits: 8
 - Parity: None
 - Stop Bit: 1
 - Flow Control: None
4. Power on your system and click the <Connect> button in the Hyper Terminal. The terminal screen will display the following messages.

```
Press <SpaceBar> to update BIOS.  
Confirm update BIOS? (y/n) y  
Begin remote BIOS flash? (y/n) y  
Starting remote flash.  
Upload new BIOS file using Xmodem protocol.
```

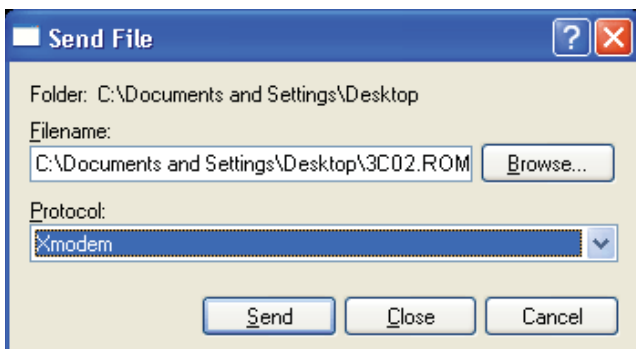
5. Following the instructions given on the screen to update the BIOS. These instructions are also shown below.
 - a. At the prompt, press the <SpaceBar> to update the BIOS.
 - b. When asked to confirm BIOS updating, press <y> to confirm BIOS updates.
 - c. Press <y> again to begin flashing BIOS remotely.
- Note:** Be sure to complete Steps a~c above quickly because you have a second or less to do so.
6. Once you've completed the instructions given, a screen will display to indicate that remote flashing is starting and the new BIOS file is being uploaded.

```
Starting FLASH Recovery.  
NVRAM data will be destroyed.  
CMOS data will be preserved.  
.....  
Ending FLASH Recovery.  
FLASH Update completed successfully.  
Rebooting...
```

7. To use Hyper Terminal to transfer the XModem protocol by using the "Send File" dialog under the "Transfer" menu, follow the instructions below to complete XModem transfers.
 - a. Select the "Transfer" menu and enter <Send>.



- b. Specify the location of the ROM file and select the proper protocol (XModem).



- c. Press <Send> to start ROM File extraction. (See the picture below.)
 - d. Once the ROM file extraction is completed, the message: "New BIOS received OK" will display.
8. Once remote BIOS flash is completed, the system will reboot.

Note: AMIBIOS Serial Flash will work with any terminal communications program that supports VT-100 and XModem protocols, including protocols designed for GNU/LINUX & BSD operating systems such as minicom. It is recommended that the terminal program be configured to use the 'CR/LF' style of line termination.

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in the system
1 long, 8 short	Video error	Video adapter disabled or missing

Notes

Appendix B

System Specifications

Processors

Two Intel Xeon 5500/5600 series processors

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

Dual Intel 5520 (IOH-36D)/ICHR10R chip platforms, including: dual Intel 5520 (IOH-36D) chips and the Intel ICHR10R (South Bridge) chip

BIOS

4 Gb AMIBIOS® SM Flash BIOS ROM

Memory Capacity

Twelve (12) 240-pin DIMM slots that can support up to 192 GB of registered ECC or up to 48 GB of unbuffered ECC/non-ECC DDR3 1333/1066/800 MHz speed SDRAM. Modules of the same size and speed are recommended with a size of 1 GB, 2 GB, 4 GB, 8 GB and 16 GB (for Unbuffered ECC/Non-ECC memory, a maximum of 4 GB per DIMM is supported)

Note: See the memory section in Chapter 5 for details.

GPUs (Graphics Processing Units)

- 7046GT-TRF: No GPU cards installed
- 7046GT-TRF-TC4: Four Nvidia Tesla C1060 GPU cards
- 7046GT-TRF-FC405: Four Nvidia Tesla C2050 GPU cards
- 7046GT-TRF-FC407: Four Nvidia Tesla C2050 GPU cards

SATA Controller

Intel ICHR10R on-chip controller for 3 Gb/s SATA (RAID 0, 1, 5 and 10 support)

Drive Bays

Eight (8) hot-swap drive bays housing six (6) standard SATA drives

Peripheral drive bays for three (3) 5.25" drive bays in storage module and one (1) 3.5" fixed drive bay

Expansion Slots

- Four PCI-E Gen. 2.0 x16 slots (Slot 4, Slot 6, Slot 8, Slot 10)
- One PCI-E Gen. 1.0 x4 (in x16) slot (Slot 1)
- One PCI-E Gen. 2.0 x4 (in x16) slot (Slot 2)
- One PCI-E Gen. 2.0 x4 (in x8) slot (Slot 11)
- Two PCI 33 MHz slots (Slot 3, Slot 5)

Serverboard

X8DTG-QF (proprietary ATX form factor)

Dimensions: (LxW) 13.00" x 15.20" (330.20 mm x 386.08 mm)

Chassis

SC747TQ-R1400B (4U/Tower rackmount)

Dimensions: (WxHxD) 11.8 x 7 x 29.4 in. (452 x 178 x 746 mm)

Weight

Gross (Bare Bone): 72 lbs. (32.7 kg.)

System Cooling

Four 9.2x3.8-cm and two 3.8-cm cooling fans (fan speed controlled by BIOS setting)

System Input Requirements

AC Input Voltage: 100-240V

Rated Input Current: 12-7A

Rated Input Frequency: 50-60 Hz

Power Supply

Rated Output Power: 1400W w/PFC (Part# PWS-1K41P-1R)

Rated Output Voltages: +12V (116A), +5Vsb (4A)

Operating Environment

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-Operating Temperature: -40° to 70° C (-40° to 158° F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-Operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

Notes

(continued from front)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.